

STEP-BY-STEP
2nd Ed.

A GUIDE TO
MOBILITY TECHNIQUES

STUDY GUIDE

LONG CANE TECHNIQUES
By Sandra Rosen, Ph.D.

ACKNOWLEDGEMENTS

Text and Materials Development

Sandra Rosen

Project Leaders

Terrie (Mary T.) Terlau
Rosanne Hoffmann

Research Assistant

Lara Kirwan

Graphics and Photography

Sandra Rosen
Terri Gilmore
Bisig Impact Group

Production Team

Lila Adkins
Cary Crumpton
Darlene Donhoff
Anna Fox
Frank Hayden
David Hines
Karen Marshall
Lou Tingle
Phyllis Williams

Expert Reviewers

Nora Griffin-Shirley
Julie Hapeman
Donna Brostek Lee
Richard Long
Grace Ambrose Zaken

TABLE OF CONTENTS

Acknowledgements	2
Introduction	4
Detection	6
Diagonal	7
Touch.....	17
Congested Area.....	40
Touch & Slide.....	44
Shorelining.....	47
Diagonal Trailing	48
Touch & Drag	54
Touch Trailing	58
Three-Point.....	66
Negotiating Doors & Stairs.....	70
Negotiating Doors.....	71
Negotiating Stairs	78
Special Situations.....	97
Sidewalk Recovery.....	98
Obstacle in the Travel Path	107
Vehicle in the Travel Path.....	111
References.....	116

INTRODUCTION

The LONG CANE techniques form the foundation for many of the travel skills used in most environments. Long cane techniques are used to detect elevation changes, obstacles, and hazards in the travel path that are below waist level. Basic cane techniques enable the traveler to locate a clear path of travel, negotiate varying terrains and elevation changes, locate and move around obstacles and hazards in the travel path safely and efficiently. They are used in unfamiliar or uncontrolled environments as well as in those environments that may be both familiar and controlled but which have elevation changes or obstacles in the travel path that the traveler needs to detect. LONG CANE techniques can be used in conjunction with NON-CANE techniques (e.g., UPPER HAND & FOREARM, TRAILING) in environments where there may be objects or protruding hazards at or above waist level (e.g., doorknobs, low tree branches) that the traveler needs to detect.

The long cane (shown in Figure 1.01 in the Diagonal technique section) is often referred to in lay terms as a “white cane” and consists of a thin shaft averaging about 12 mm in diameter. Although most canes are white to enhance their visibility at night, canes can be purchased in a variety of other colors. Cane shafts are commonly made from aluminum, graphite, carbon fiber, or fiberglass and may or may not have a crook at the top. The top portion of the shaft (generally around 12 inches or less depending on the length of the cane) is covered with a plastic or rubber grip which the traveler holds. The long cane also has a tip at the bottom that contacts the ground. Canes come in many different styles with varying grips and tips. Each style of cane offers specific advantages in different travel environments. For example, the fiberglass cane is lightweight and easy to move, while the aluminum cane, with its greater weight, provides increased proprioceptive information to the user. Tips come in differing sizes, shapes, and materials to amplify auditory information as the tip contacts the ground with each step or to glide smoothly over rough walking surfaces. Some canes are rigid or non-folding, others fold into several sections connected by an elastic cord, and others telescope into a fraction of their length for easy storing in crowded environments. Some canes are designed for rigorous travel, while others are designed only to indicate that the user has a visual impairment.

LONG CANE techniques are divided into four categories of function: detection, following a shoreline, negotiating doors and stairs, and special situations such as negotiating obstacles in the travel path. While each technique is designed for a specific purpose or for use in a specific travel environment, the techniques, as a whole, provide the foundation that enables the user to travel safely and effectively in most environments.

Detection

In detection, the long cane serves as both a probe and a bumper. It verifies a safe and clear travel path in front of the user and serves to detect low obstacles and elevation

changes in the travel path before the traveler bumps into them. Detection techniques can also be used to identify specific features of the travel path, such as textural changes.

Shorelining

Specific long cane techniques are used to follow the edge, or "shoreline," of the travel path. This is often done to find a specific item or location along the edge of the travel path, such as a pole at a bus stop, or an intersecting hallway or sidewalk. In addition, some travelers use these techniques to maintain tactile contact with specific landmarks in the environment rather than travel through open space as they go from point A to point B.

Negotiating Doors & Stairs

Specific techniques using the long cane enable the traveler to detect and safely negotiate doors and stairs of varying sizes and shapes and in a variety of indoor and outdoor environments.

Special Situations

These techniques are used to safely and efficiently identify contact with an obstacle in the travel path (e.g., a piece of furniture in a room or a vehicle parked across a sidewalk) and to locate a clear path by which to walk around it. These techniques are also used to do such things as relocate the travel path after inadvertently moving away from it.

DETECTION

DIAGONAL

Purpose

This technique is used to obtain limited lower body protection from the cane. Because it does not reliably detect all obstacles or elevation changes in a traveler's path, it is typically used only in familiar, controlled environments where there are no downward level changes (or where the traveler is aware of the location of any level changes) and where objects in the environment are unlikely to be moved without the traveler's knowledge.

Prerequisite Techniques

None

Teaching Environments

Begin in a quiet, familiar indoor area, ideally a hallway that is free of obstacles and that has a smooth floor that will allow the cane to slide forward easily. A short, straight, and narrow hallway may help minimize veering during the early learning process.

Progress to areas in which the hallway is longer and wider. Gradually introduce areas that have carpeted surfaces, obstacles to detect, and intersecting hallways to negotiate.

Skills

Standard

1. The traveler walks with her shoulders level and her trunk facing forward without rotation.
2. She holds the cane in a static position, as follows:
 - The cane hand is held in line with the shoulder and 6–8 inches in front of the near hip (see Figure 1.01). The elbow is relaxed, or even bent slightly.
 - This positions the cane grip forward to protect the body around the near hip and to provide reaction time for the traveler should the cane grip contact an object.
 - It is important to keep the cane hand from drifting either to the side or toward midline, because such movements will lessen the cane coverage on one side.
 - Trying to reach the cane hand too far forward can sometimes cause the trunk to rotate toward the opposite side. This, in turn, can position the cane tip too far to the opposite side and leave the grasp hand side of the body without sufficient protection. It can also potentially cause the traveler to veer.



Figure 1.01

The cane hand is held in line with the shoulder and 6–8 inches in front of the near hip.

3. The traveler holds the cane with the “Handshake Grasp,” (a.k.a., the “Index Finger Grasp” (Fazzi & Barlow, 2017), but with the back of her hand facing upward (see Figure 1.02). The traveler also:
 - Lowers her grasp on the cane grip so that the top of the grip extends 1–2 inches beyond her shoulder,
 - Extends her index finger flat along the top of the grip (on the flat side of the grip, if there is one),
 - Bends her remaining three fingers around the grip of the cane,
 - Wraps her thumb around the cane and rests it against the edge of her middle finger.

Note: Because the Handshake Grasp is used in both the DIAGONAL and TOUCH techniques, this grasp makes it easy for the traveler to switch between these two techniques without needing to readjust her grasp on the cane.

- Some travelers find that placing the index finger alongside the cane grip is a natural position that enables them to easily form an accurate perception of the location of the tip (LaGrow & Long, 2011). One way to think of this is to view the cane as an extension of the index finger, pointing to where the cane contacts the ground.
- As alternatives to the Handshake grasp, the traveler may choose to use the Pencil Grasp or the Thumb Grasp (see the Modifications section, below).



Figure 1.02

The traveler holds the cane with the Handshake Grasp, but with the back of her hand facing upward. A white circle surrounds the traveler's hand to highlight the grasp.

4. The traveler holds the cane diagonally across her body; the tip and grip each extend 1–2 inches beyond her body width (see Figures 1.03a and 1.03b). The cane tip either touches the ground or is held 1–4 inches above the ground.



Figure 1.03a

The traveler holds the cane diagonally across her body; the tip and grip each extend 1–2 inches beyond her body width (front view).



Figure 1.03b

The traveler holds the cane diagonally across her body; the tip and grip each extend 1–2 inches beyond her body width (rear view).

- Some travelers find it easier to learn this technique if they leave the tip on the ground initially. Doing so provides increased tactile feedback of the cane position and the ability to detect elevation changes, and it requires less effort. Walking with the cane tip on the ground works well on smooth floors; however, the cane tip may not slide smoothly on uneven or rough surfaces, such as carpet. In such instances, the traveler may find that using a larger tip (e.g., marshmallow, teardrop, ball, roller) will help the cane tip slide more smoothly. As an alternative, the traveler can hold the cane tip up 1–2 inches above the ground to keep it from sticking on rough or uneven surfaces.
- Some travelers have difficulty keeping the tip from rising too high at first. This may be due to either anxiety or the need to develop proprioceptive awareness of the proper cane position. Some travelers find that lifting the tip slightly off the ground can be done most effectively by either squeezing the cane grip slightly or by exerting slight upward pressure on the cane shaft with the middle finger (which is underneath the cane grip).
- An effective method that enables travelers to self-monitor the height of their cane tip is to periodically touch the tip to the ground (e.g., every 10–20 steps, initially). The traveler should not tap the cane, but should instead lightly “land” the cane and then “take off” again. This not only gives travelers the opportunity to reposition the tip correctly, if needed, but also gives feedback on how high it is by the distance that they need to lower the tip to contact the ground. As travelers gain skill in maintaining the correct tip position, this self-monitoring activity can be faded.
- It is important to maintain the static position of the cane while walking. If the cane tip moves toward midline, coverage of the body on the cane tip side will be decreased. If the tip moves too far out to the side, the cane tip may get in the

way of other pedestrians, contact objects outside of the traveler's path, and/or not contact objects in a timely manner, thus not providing the traveler with optimum time to react.

- Some travelers find it helpful to identify a clock reference for the tip position (e.g., "It feels as if it is at 10:00 or 2:00.").

Modifications

While most people prefer the Handshake grasp (LaGrow & Long, 2011), there are alternate grasps that a traveler can use if she so chooses.

Thumb Grasp

The traveler holds the cane with her thumb pointing down the shaft and all remaining fingers wrapped around the grip. The back of her hand faces upward (see Figure 1.04).



Figure 1.04

The Thumb Grasp (A white circle around the traveler's hand highlights this grasp.)

Pencil Grasp

The traveler holds the cane with the palm of her hand facing midline.

The cane grip rests in the base of the web of the thumb and forefinger, both of which are extended down the cane shaft; her remaining fingers are flexed, with her middle finger supporting the weight of the cane (see Figure 1.05).



Figure 1.05

The Pencil Grasp (A white circle around the traveler's hand highlights this grasp.)

Turning

To ensure that the cane provides optimum protection while not interfering with nearby pedestrians when the traveler changes her direction of travel

1. When preparing to turn (e.g., when reaching the opening to an intersecting hallway), the traveler pauses and pulls the cane tip back to her feet.
 - Depending upon her speed of travel and the environment, the traveler may need to take 1–2 more steps after locating an opening auditorily, so that she doesn't turn prematurely.
 - Pulling the cane tip close to her feet before turning a corner prevents tripping passersby as she turns; this is especially important in congested areas. Pausing and pulling the cane tip close to her feet can be eliminated if the traveler is certain that there are no other pedestrians around.
2. After listening to be certain that no pedestrians are passing by in the immediate area of her new travel path, the traveler turns and resumes the DIAGONAL position, and she then continues walking.

To Move the Cane to the Other Hand

1. The traveler brings her cane hand to midline with her palm facing toward midline; she simultaneously brings her free hand to midline with the palm facing toward midline.
2. The traveler grasps the cane with her free hand and assumes the proper cane position, being careful not to let the cane tip rise excessively high while she moves the cane to her other hand.

Common Errors and Corrections

Error:

The traveler holds the cane tip higher than about 1–2 inches off the ground.

Correction:

Holding the cane tip no higher than about 1–2 inches off the ground helps prevent the cane from poking someone and locates low-lying objects effectively. It is not always necessary or efficient to keep the cane tip in contact with the floor.

Error:

The traveler reaches her cane hand more than 6–8 inches forward of the near hip.

Correction:

Holding her arm no more than 6–8 inches forward of the near hip minimizes the possibility that the traveler will inadvertently rotate her trunk (in the effort to reach her hand forward) and veer.

Error:

When holding the cane in the diagonal position, the traveler raises the shoulder of her cane hand higher than her opposite shoulder.

Correction:

Raising one shoulder higher than the other can cause the traveler's trunk to rotate toward the low shoulder and, thereby, cause her to veer inadvertently.

Error:

The traveler allows the cane tip to drift forward as she walks.

Correction:

Keeping the cane in the proper position and not allowing the tip to drift too far forward ensures that the cane will provide 1–2 inches of coverage beyond the shoulder of the non-cane hand and protect that side of the traveler's body.

Error:

The traveler allows the cane tip to drift backward as she walks.

Correction:

Keeping the cane in the proper position with the tip forward helps to ensure that the traveler will detect objects in her path with sufficient warning to avoid contacting them with her body. Allowing the cane to drift backward can also cause it to extend too far past the traveler's shoulder, unnecessarily contacting objects outside of the travel path and, perhaps, getting in the way of other pedestrians.

Error:

The traveler fails to hold her cane hand 6–8 inches forward of the near hip and instead lets her arm hang down directly at her side.

Correction:

Keeping her hand forward of the near hip positions the cane to detect objects and to still allow a minimum amount of time for the traveler to react when she does contact an object. In addition, depending upon the length of the cane, the cane tip may not extend far enough on the traveler's other side to provide adequate protection when the traveler hangs her arm straight down at her side.

Error:

The traveler fails to slow her pace while walking using the DIAGONAL technique.

Correction:

Slowing her pace is important, due to the limited protection provided by the cane. A slower pace provides the traveler with more reaction time to respond to objects that the cane detects.

Error:

The traveler fails to pull the cane tip to her feet before turning.

Correction:

Pausing and pulling the cane tip to her feet before turning prevents the traveler from tripping passersby with the cane.

Notes for Teachers

The DIAGONAL technique is often introduced after the self-protective procedures. As such, it provides the traveler with her first opportunity to move through the environment independently with a cane, to practice straight-line travel skills, and to identify and respond quickly when the cane contacts an object. Due to its relative simplicity, the DIAGONAL technique is generally taught before the TOUCH technique.

When the tip is held on the ground, the cane can detect drop-offs and texture or other surface changes. In order for the cane to detect the change in the surface with sufficient warning for the traveler to react, however, she must approach the change either perpendicularly or from an angle at which the cane tip will contact the change before the traveler's foot does.

The diagonal position of the cane can leave the body unprotected from low objects (e.g., waste baskets, small tables) and drop-offs (e.g., descending stairs) under the grip side of the cane. For this reason, the DIAGONAL technique is generally only used in familiar, controlled environments where the traveler knows where objects and elevation changes are located. She should learn to perform this technique with each hand so that she can simply move the cane from one hand to the other, as needed, in order to

position the tip to contact anticipated objects and elevation changes. Similarly, because the grip side of the cane can pass over low objects when turning, the traveler may choose to clear with the cane after making the turn and before she starts to walk forward.

The DIAGONAL technique can be used in conjunction with several other techniques, such as the UPPER HAND & FOREARM and TRAILING techniques. It can be used in a modified form when descending stairs or when walking with a human guide. It may be used in uncontrolled environments by travelers who have usable travel vision. In fact, many travelers with such vision prefer to carry a cane for identification purposes or to use, as needed, to negotiate specific environmental situations.

When initially teaching the cane position and various grasps used in this technique, it is often helpful to do so while the traveler is standing with her back supported against a wall. This additional body support allows some travelers to better focus their concentration on learning the technique. Progress to performing this skill while walking.

When the traveler first practices this technique while walking, it is common to have difficulty maintaining a straight line of travel. For this reason, it is often helpful for the teacher to provide assistance in straight-line travel with either auditory or tactile cues. To provide auditory cues, the teacher walks ahead of the traveler and makes a repetitive sound (e.g., clapping, clicking, verbal feedback) for the traveler to follow. To provide tactile cues, the teacher walks slightly behind the traveler and touches either her left or right shoulder blade lightly to indicate the direction in which the traveler is veering, or in which she needs to move, in order to correct her line of travel. This latter technique is often referred to as "guiding from behind" (see Figure 1.06).

- Practicing this technique provides an excellent opportunity to work also on auditory space and object perception, distance and environmental awareness, and basic orientation skills.



Figure 1.06
Guiding from behind

When walking near a wall, the traveler should hold the cane in the hand opposite the wall, with the tip on the side nearest the wall. This positions the cane to detect low objects along the wall while being less likely to trip pedestrians.

The traveler should learn to perform this technique with each hand. Practice first by using the dominant hand, and then practice by using the non-dominant hand. Remember that if the traveler changes hands while moving, she may momentarily lose some protection from the cane.

The components of the DIAGONAL technique can be evaluated most easily from the following views:

- **Front View**
 - Body coverage with respect to cane tip and grip position
 - Proper posture
 - Hand and arm position
 - Cane tip's height above the ground
- **Side View**
 - Reaction time
 - Cane tip position
 - Arm and shoulder position
- **Rear View**
 - The cane tip's height above the ground and body width coverage by the cane. The instructor should be able to see both the end of the cane grip and the cane tip, each on opposite sides of the traveler's body.

Related Techniques

Basic Guiding (When the Traveler Is Carrying a Cane)

Congested Area

Diagonal Trailing

Direction-Taking¹

Escalators—With a Guide (When the Traveler Is Carrying a Cane)

Revolving Doors

Negotiating Stairs

Negotiating Stairs—With a Guide (When the Traveler Is Carrying a Cane)

Traversing Open Spaces¹

¹ Knowing the DIAGONAL technique enables the traveler to safely cross a familiar, open area (in which there are no level changes) after establishing her direction of travel.

TOUCH

Purpose

This technique is used to detect obstacles, hazards, and elevation changes in the travel path. It can be used in all environments and provides the foundation for many of the basic cane skills. It is the primary technique used in most forms of advanced cane travel.

Prerequisite Techniques

None

Teaching Environments

Begin in a quiet, open, familiar area that is free of obstacles, in which the ground is level and smooth, and that does not require the traveler to ascend or descend steps or negotiate doors. Long corridors or a large gymnasium with smooth floors and unobstructed space provide an ideal learning environment. If such spaces are not available, a long smooth driveway, sidewalk, or other paved area may suffice. Begin by walking short distances and gradually increase the distance traveled.

Progress to unfamiliar areas, including those that have irregular walking surfaces (e.g., uneven sidewalks), level changes (e.g., stairs), and obstacles in the travel path that the cane will detect.

Lead up to using this technique in gradually more complex environments, such as residential, small business, and urban areas.

Skills

Unlike most mobility techniques, the TOUCH technique is generally not taught or performed as a series of sequential steps. Rather, it is generally taught as a grouping of components that are performed simultaneously.

Components

Posture

1. The traveler stands and walks with good posture.
 - Shoulders, trunk, and feet should be aligned facing forward. The traveler's shoulders should be relaxed and held neither excessively raised nor lowered (see Figure 2.01).
 - Proper posture assists the traveler to maintain a straight line of travel. It also helps keep the cane arm from becoming tense or tired, which can decrease

the traveler's reaction time and the amount of information that he receives through the cane.

- Trunk rotation is often seen when a student attempts to reach too far forward with the cane, or in the presence of scoliosis.
- When walking, the traveler's free arm should have a normal arm swing. A tense lower arm and/or lack of arm swing may sometimes be a sign of stress during travel.
 - Some travelers who are congenitally blind or who have balance problems do not naturally swing their arms while walking.



Figure 2.01

The traveler's shoulders, trunk, and feet are aligned facing forward.

Grasp

Most travelers perform this technique using their dominant hand, unless they have a specific reason to do otherwise (e.g., using an ambulatory aid in the dominant hand).

Handshake grasp

1. As shown in Figure 2.02, the traveler holds the cane with the grip resting in his palm; the top of the grip is at, or slightly above, his wrist joint.
 - The crook of the cane, if present, points downward.



Figure 2.02

The Handshake Grasp

2. The traveler places his index finger flat along the side of the grip and bends his remaining three fingers comfortably around the grip of the cane. He wraps his thumb around the cane and rests it against the edge of his middle finger or positions his thumb on top of the cane, pointing it down the shaft.

Note: If the grip has a flat side, it should face to the right for a right-handed user and to the left for a left-handed user so that the traveler's index finger can lay flat along it and provide a more comfortable grasp. The index finger must be fully extended at all joints in order to avoid placing undue stress on the finger joints.

- The position of the index finger provides lateral control and the ability to most easily monitor the cane's position and detect tactile information transmitted through the cane.
- The thumb provides lateral control and downward pressure.
- The remaining fingers provide support under the cane and some stability.

3. The traveler holds the cane with a firm, yet comfortable grasp.
 - Grasping too tightly can cause tension and fatigue and limit tactile information received through the cane.
 - Grasping too loosely can make controlling the cane more difficult and can also limit tactile information received through the cane.

Pencil grasp

1. As shown in Figure 2.03, the traveler holds the cane so that the grip is secured in the web between his thumb and index finger; the opening of the web faces forward. He lays his index finger flat along one side of the cane grip and lays his straight thumb flat along the other side of the grip. His remaining fingers are loosely bent behind the grip, which rests on top of his middle finger.



Figure 2.03
The Pencil Grasp

Arm and Hand Position

1. The traveler holds his upper arm naturally at his side; his elbow is bent just enough to raise his hand to about waist height, and his hand is positioned at midline. He holds his hand about 6–8 inches in front of his trunk. If using the Handshake grasp, the traveler positions his hand so that the back of his hand faces to the side and his thumb rests on top of the grip (see Figures 2.04a and 2.04b, below).
 - Centering his hand at midline helps the traveler to walk forward in a straight line (often called a “straight line of travel”) and is necessary for a symmetrical arc in which the cane extends equally to either side of the body. If the hand is not centered in midline, the arc can become unequal, resulting in insufficient coverage on one side of the body; it can also cause the traveler to veer slightly toward that side rather than walk in a straight line.
 - To develop an awareness of a centered hand position, the traveler can initially:
 - Visualize his hand as a forward extension of his midline or belt buckle (or, possibly, belly button for younger children);
 - Center his hand and walk, allowing the cane tip to slide forward along the walking surface;
 - Grasp the wrist of his cane hand from underneath with his free hand to help hold his cane hand in midline.

As with all learning assists, the traveler should move away from them as soon as possible.

- If the traveler is unable to center his hand, he may need to use a longer cane or, if necessary, slow his walking pace in order to allow more time to react when he contacts obstacles on the side that may have less cane coverage.

- Holding the cane so that the top of the grip is 6–8 inches (about one adult hand-span) in front of his body generally allows sufficient room for the traveler to react when the cane contacts objects in front of him and to avoid jabbing himself in the stomach with the end of the cane grip.
- Holding his hand at about waist height positions the cane to detect shallow drop-offs most readily. It also positions the cane so that the shaft will pivot upward when the cane contacts an object (rather than downward and towards the traveler's body).
 - The traveler can determine the optimum wrist height by walking slowly toward a wall or other vertical surface and noting how the cane reacts when the cane tip contacts the object. Does the cane pivot upward, or does it move downward or directly toward the traveler's stomach? He should repeat this procedure until he can consistently select the correct wrist height.

If the traveler has difficulty detecting shallow drop-offs, he can elevate his wrist slightly, pointing the cane to the ground at a sharper angle. Holding his wrist too high, however, lessens the forward extension of the cane and can cause the cane to stick more on rough or irregular surfaces, such as grass.



Figure 2.04a

The traveler holds his upper arm resting against the side of his body; his hand is held at midline at about waist height and 6–8 inches in front of his body (side view).



Figure 2.04b

The traveler holds his upper arm resting against the side of his body; his hand is held at midline at about waist height and 6–8 inches in front of his body (front view).

Wrist Motion

1. Holding his forearm still and not allowing it to rotate, the traveler bends his wrist right and left as if it were a hinge; this is sometimes referred to as a “swinging door motion” (see Figure 2.05).
 - This moves the cane tip from side to side and facilitates a low arc (see “arc height,” later in this skill), which is necessary in order to detect very low objects in the traveler’s path. Rotating the forearm will often result in an arc that is too high and subsequent failure to detect low lying objects and low curbs with the cane.
 - To verify that his forearm is not rotating as he bends his wrist, the traveler can place the index finger of his free hand on the end of his forearm bone at a point in line with his thumb and located just above the wrist joint (see Figure 2.06). This point should remain facing upward at all times.
 - If the traveler has difficulty learning to not rotate his forearm while the cane tip moves from side to side, he can initially hold the wrist of his cane hand still from underneath with his free hand. As with all learning assists, the traveler should move away from these assists as soon as possible.

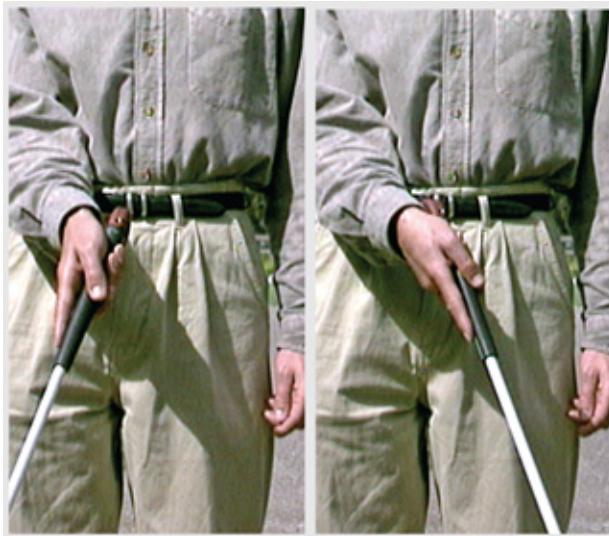


Figure 2.05

Two photos show how the traveler bends his wrist (a) to the right and (b) to the left while holding his forearm still.



Figure 2.06

Feeling the forearm bone that is just above the wrist and in line with his thumb while bending his wrist right and left easily lets the traveler know if he is also rotating his forearm.

Arc Width

1. The traveler touches the cane tip to the ground 1–2 inches beyond his body width on each side (see Figures 2.07a and 2.07b).
 - Depending upon a traveler's body shape, the widest part of his body could be the hips, the stomach, or the shoulders.
 - This coverage ensures that the cane will detect objects immediately in the travel path and eliminates unnecessary contact with objects outside of the travel path.
 - A symmetrical arc is important. If the arc is wider on one side, some travelers may tend to veer toward that side.



Figure 2.07a

Two photos show how the traveler touches the cane tip to the ground 1–2 inches beyond his body width on each side (front view).



Figure 2.07b

Two photos show how the traveler touches the cane tip to the ground 1–2 inches beyond his body width on each side (rear view).

Arc Height

1. While walking, the traveler should not actively lift his cane tip in the middle of the arc; rather, he should let the natural up and down movement that his body makes with each step passively raise the tip approximately one inch from the ground in the middle of each arc (see Figure 2.08). The cane tip should contact the ground very lightly at the extremes of each arc to avoid excessive noise, sticking, bouncing, or vibrating.

- Vibration, bouncing, or a loud sound made by the cane as it taps the ground at each end of the arc usually indicates that the arc is too high. It may also indicate that the traveler is grasping the cane too tightly.
- An arc height of no more than one inch above the ground facilitates the smooth movement of the cane while avoiding unnecessary snags of the cane on rough features in the walking surface (e.g., cracks in the sidewalk). Keeping the cane tip low also facilitates the detection of low objects and elevation changes in the travel path (e.g., slightly raised sections of broken sidewalk).
- When going over rough terrain, it may be necessary to use a slightly higher than normal arc in order to keep the cane from snagging unnecessarily
- Or as an alternative, the traveler may choose to use a larger cane tip (e.g., marshmallow, roller, ball, teardrop) if he anticipates such terrain on his route. Larger tips, however, are generally used with a modification of the TOUCH Technique called "Constant Contact" (described under the Modifications section, below).



Figure 2.08

While walking, the traveler allows the natural up and down movement that he makes with each step to passively raise the tip approximately one inch from the ground in the middle of each arc. (White arrows pointing left and right show the cane's arc-like movement.)

In-Step

1. The cane tip touches the ground at the end of each arc as the traveler's opposite heel contacts the ground. In this way, the cane tip clears the area in which the traveler will place his foot when he takes his next step on that side. This is called being "in-step" (see Figure 2.09).
 - The cane should be moved smoothly at a constant speed through the entire arc cycle. The speed of the cane is determined by the speed of walking (not vice versa). The traveler concentrates on walking naturally and then on moving the

cane to contact the ground at the same moment that his heel contacts the ground.

- If a traveler's coordination of cane and heel contacts is incorrect (referred to as being "out-of-step"), the cane tip does not contact the ground where the foot later lands and, therefore, does not provide optimum preview and detection of obstacles and elevation changes in the traveler's path (see Figure 2.09).
 - To start in-step, the traveler begins with the cane tip on the ground in front of the foot with which he prefers to step off. If the traveler has no preference, he may find the most comfortable position to be starting with the cane tip in front of the foot opposite his cane hand and then stepping first with that foot while moving the cane tip to the opposite side of the arc.
 - If the traveler is in-step and his feet do not land in the area just cleared by the cane, it is possible that the cane length may be incorrect for the traveler's stride (see "Measuring the Long Cane" in Introduction and Appendices).
- To remedy being out of step, the traveler can do the following:
 - He can stop walking and then start again in-step.
 - He can correct in-step while on the move. This is a more efficient method because it eliminates the need for the traveler to first come to a complete stop before correcting in step. To do this, the traveler can do one of the following:
 - He can tap his cane on the same side for two consecutive steps, then resume the TOUCH technique, although this means that he will momentarily lose coverage on the opposite side of his body.
 - He can do two arcs (at double speed) while taking one step. Some travelers may find it helpful to pause or slow their pace slightly when doing so.

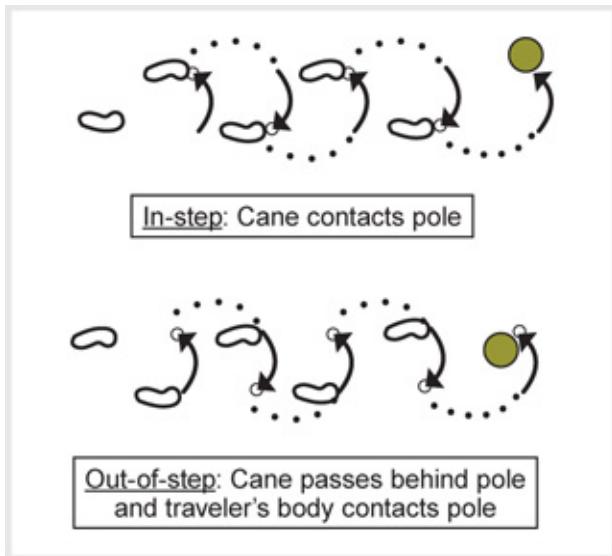


Figure 2.09

The “in-step” diagram (top) shows the cane tip touching the ground at the end of each arc as the traveler’s opposite heel contacts the ground; this positions the cane tip to most reliably contact objects in his path. (A box in the top part of this diagram states, “In-step: Cane contacts pole.”) The “out-of-step” diagram (bottom) shows that if the cane tip does not contact the ground where the traveler’s foot later lands, it does not provide optimum detection of obstacles and elevation changes. (A box in the bottom part of this diagram states, “Out-of-step: Cane passes behind pole and traveler’s body contacts pole.”.)

Stride and Speed

1. Although the traveler’s stride length will vary with different speeds, he should walk at a speed and with a stride length that is even and comfortable.

Clearing

1. When walking in an unfamiliar or uncontrolled environment, the traveler should clear the area by moving his cane in one full arc before taking his first step to verify that there are no obstacles or elevation changes immediately in front of him.

Constant Contact

This method is actually a variation of the Standard method of the TOUCH technique, in which the cane tip remains in contact with the ground at all times. It provides the most reliable detection of subtle drop-offs, gradients, blended curbs, and low objects in the travel path. Unlike the Standard method, which may only detect some obstacles or elevation changes at the ends of the arc, the Constant Contact method detects such things at every point in the arc.

Due to this increased tactile feedback, the Constant Contact method has become the preferred technique for many travelers. It is so commonly used by travelers that some

travelers and instructors consider it to be a primary technique of its own, rather than a variation of the standard TOUCH technique.

Because the Constant Contact method eliminates the need to concentrate on the arc height, it is also especially preferred by travelers who have weakness in their wrists or who, for any reason, have difficulty maintaining a proper arc height.

While this method detects subtle changes in the walking surface, it works best with cane tips that have a large surface area (e.g., ball tip, roller tip).

1. The traveler performs the standard TOUCH technique with the cane tip remaining in contact with the walking surface at all times.
 - If the traveler finds that a pencil style cane tip sticks excessively and/or wears too quickly, he may wish to use a different cane tip (e.g., marshmallow, roller, ball, teardrop). See the glossary in Introduction and Appendices for photos of sample cane tips.

Turning

To ensure that the cane provides optimum protection while not interfering with nearby pedestrians when the traveler changes his direction of travel

1. When preparing to turn, (e.g., when reaching the opening to an intersecting hallway), the traveler pauses and pulls the cane tip back to his feet.
 - Depending upon his speed of travel and the environment, a traveler may only locate the opening auditorily after he has already taken 1–2 steps past it. Unless he is sure that this is the case, however, he should take 1–2 more steps after locating the opening so that he doesn't turn prematurely.
 - Pulling the cane tip close to his body when turning a corner prevents the traveler from tripping passersby. This is especially important in congested areas. Pausing and pulling the cane tip close to his body can be eliminated if he is certain that there are no other pedestrians nearby.
2. After listening to be certain that no pedestrians are passing by in the immediate area of his new travel path, the traveler turns and then re-extends the cane, clears, and resumes travel.

Common Errors and Corrections

Error:

The traveler moves his entire arm from left to right as he swings the cane rather than limiting the movement to his wrist only.

Correction:

The traveler should hold his arm still and move only his wrist. This facilitates an even arc and a more precise awareness of the cane's movement.

Error:

The traveler fails to maintain an arc width of 1–2 inches beyond his body width on each side.

Correction:

Maintaining an arc width of 1–2 inches beyond his body width ensures that the cane will detect obstacles in the travel path on each side, with a small margin added for safety.

An insufficient arc can be due to several factors:

Not centering the cane hand at midline will cause an otherwise normal arc to not fully cover the side opposite the cane hand.

Not bending the wrist of the cane hand sufficiently left or right will decrease the arc width on that side.

Error:

The traveler fails to remain in-step when performing this technique.

Correction:

The traveler should remain in-step when performing this technique. This allows the cane tip to contact the ground two steps ahead of each foot, previewing the approximate area where the foot will fall next, thereby ensuring that the cane will detect any obstacles in the traveler's path in sufficient time for him to react.

Error:

The traveler's cane arc exceeds 1–2 inches on each side of his body width.

Correction:

The traveler's arc width should extend only 1–2 inches beyond body width on each side. This provides optimum detection of obstacles while avoiding contact with objects and people not in the immediate travel path.

Error:

The traveler bends the index finger of his cane hand so that only the fingertip touches the cane grip.

Correction:

The traveler should hold his index finger straight at all joints. This minimizes discomfort and fatigue, and it facilitates receiving sensory information transmitted by the cane.

Error:

The traveler fails to hold his cane hand in midline as he performs the TOUCH technique.

Correction:

Holding his hand at midline facilitates equal cane coverage on both sides of his body. Failing to hold his hand at midline can decrease the arc width on the opposite side to less than 1–2 inches beyond body width.

Error:

The traveler rotates his forearm as he swings the cane left and right.

Correction:

The traveler should move his wrist in a left/right motion without rotating his forearm. This facilitates a low arc, which more reliably detects low objects and shallow curbs in the traveler's path.

Error:

The traveler holds his cane hand less than 6–8 inches in front of his body.

Correction:

Holding his cane hand 6–8 inches in front of his body allows the traveler sufficient time to react when his cane contacts objects in the travel path and to avoid bumping into the objects with his body.

Error:

The traveler holds his cane hand more than 6–8 inches in front of his body.

Correction:

Reaching to hold the cane grip too far ahead of his body can cause the traveler to rotate his trunk and to veer inadvertently.

Error:

The traveler fails to pull the cane tip close to his feet before turning.

Correction:

Pulling the cane tip close to his feet before turning prevents the traveler's cane from accidentally tripping passersby as he turns.

Error:

The traveler fails to clear after turning and before stepping forward in a new direction.

Correction:

Clearing before stepping forward in a new direction prevents the traveler from bumping into an object or person during his first step forward in an unfamiliar or uncontrolled area.

Error:

The traveler holds the shoulder of his cane arm raised while walking.

Correction:

The traveler should hold the shoulder of his cane arm relaxed. Holding the shoulder relaxed decreases tension in the cane arm and increases comfort, lessens fatigue, increases reaction time, allows better perception of tactile information perceived from the cane, and, in some cases, decreases veering.

Error:

The traveler fails to hold his cane hand at about waist height.

Correction:

Holding the cane hand at about waist height positions the grip to move upward and not downward when the cane tip contacts an object. It also increases the angle at which the cane contacts the ground, thereby facilitating easier detection of subtle downward elevation changes (e.g., low curbs).

Error:

The traveler holds the cane so that his index finger rests either below or on top of the cane grip rather than along the side of the grip.

Correction:

Holding the cane grip so that his index finger rests on the side of the grip provides optimal control of the cane while ensuring minimal strain on the wrist joint when the cane contacts objects. This position also can facilitate an increased awareness of specific cane movements (e.g., when the cane tip drops off a down-curb ahead).

Error:

The traveler fails to maintain a firm grasp on the cane grip, but instead holds the cane grip very loosely.

Correction:

Holding the cane grip with a firm grasp facilitates better control of the cane's motion and receipt of information transmitted by the cane. Holding the cane too loosely can make it difficult to maintain control of the cane when it unexpectedly contacts objects or snags on a rough ground surface (e.g., grass or broken sidewalk).

Error:

The traveler holds the cane grip too tightly.

Correction:

The traveler should hold the cane grip firmly, but not tightly. Holding it too tightly can cause stress and fatigue at the wrist joint and can decrease the amount of tactile information perceived from the cane.

Error:

The traveler allows his arc height to exceed 1 inch above the ground.

Correction:

Keeping the arc height at no more than 1 inch above the ground helps to ensure that the cane will detect low obstacles in the traveler's path.

Error:

The traveler holds his cane arm fully extended with his elbow locked.

Correction:

Keeping his upper arm at his side with his elbow bent just enough to center his cane hand keeps the arm relaxed enough to flex when his cane snags or contacts an obstacle in the travel path. When the elbow is locked, any sudden impacts or snags of the cane can irritate the elbow joint. In addition, keeping the upper arm at the side alleviates any tendency to pull the shoulder of the cane arm forward—a position that can, in turn, rotate the trunk and potentially alter the line of travel.

Notes for Teachers

The TOUCH technique is used both indoors and outdoors, and in familiar and unfamiliar environments.

This technique provides environmental information and protection from obstacles at ground level. It does not provide protection from protruding hazards above the waist (e.g., phone booths, water fountains, overhanging hedges, low signs, tree branches; see Figure 2.10).



Figure 2.10

The TOUCH technique does not provide protection from protruding objects, such as the telephone and the water fountain that are located above the waist.

Because this is a complicated skill with many components, it is often helpful to structure beginning instruction so that the traveler needs to concentrate on only one component at a time. This can minimize confusion and learning overload (LaGrow & Long, 2011).

- A suggested training sequence follows. The traveler should acquire proficiency at each step before progressing to the next one.
 - The traveler learns to grasp the cane correctly while standing in a stationary position.

- The traveler assumes the correct arm and hand position while standing stationary.
 - The traveler may then walk forward in this position, allowing the cane tip to slide forward on the walking surface to proprioceptively reinforce the correct position of his arm and hand.
- Returning to a stationary position, the traveler learns the proper wrist motion and arc width.

Note: It is often helpful to initially teach grasp, arm and hand position, wrist motion, and arc width while the traveler is standing with his back supported against a wall so that he can concentrate on learning the technique and not be distracted by balance or orientation demands.

- The traveler walks forward, incorporating the in-step component of the technique.
 - Some travelers have difficulty developing the ability to remain in-step before Arc Height is introduced. If this is the case, it is sometimes helpful to introduce Arc Height and then assist the traveler to refine his ability to remain in-step later.
- The traveler learns and refines the Arc Height while walking.
- Regardless of the sequence in which an instructor chooses to teach the technique, it is important to develop the proper technique from the beginning because incorrect habits are difficult to change later. An error in the performance of an earlier component can also lead to the false appearance of an error in the performance of a later item. For example, if the hand is not centered, the traveler may appear to have a problem with his arc width.

Initially the instructor provides frequent verbal feedback and may assist the traveler to establish and maintain a straight line of travel. This continues until the traveler develops a kinesthetic awareness of the components of the technique and can begin to identify needed corrections on his own. The instructor then gradually reduces the amount of verbal feedback and emphasizes self-monitoring and self-correction of all components of the technique.

In order for the cane to provide optimum detection of objects and elevation changes in the travel path, it is important for the traveler to maintain a consistent technique at all times, regardless of whether he is walking quickly or slowly.

In order to best evaluate the traveler's performance of the various aspects of the TOUCH technique, the instructor moves around the traveler as he walks. This enables the instructor to observe the technique from varying positions. The components of the TOUCH technique can be evaluated most easily from the following views:

- **Front View**
 - Posture
 - Arm Position and Wrist Motion
 - Arc Height
 - In-Step
- **Rear View**
 - Consistency and an arc of 1–2 inches beyond body width on each side
 - The instructor should not see the elbow, forearm, or hand of the cane arm.
 - In-Step
 - Shoulders even; one or both not unusually raised

Note: Some people naturally have one shoulder that appears higher than the other. If so, this shoulder should not raise higher than usual when performing the TOUCH technique.

- **Side View**
 - The traveler does not overstep the forward coverage of the cane.
 - Distance of the cane hand to the stomach is 6–8 inches.
 - The traveler's free arm should swing naturally.
 - The traveler reacts quickly enough to information transmitted by the cane to avoid obstacles and deal with elevation changes.
 - The trunk faces straight forward.

The importance of developing proficiency and consistency in the performance of the TOUCH technique cannot be overemphasized. It, more than any other technique, forms the foundation for safe and efficient travel in all environments. Highly skilled performance of the TOUCH technique will enable the traveler to develop enough precision to detect subtle environmental information through the cane, such as slight variations of texture and gradient (LaGrow & Long, 2011). Conversely, unless a high level of proficiency is developed, the traveler may not achieve the optimum skill level needed to travel safely and efficiently in all environments.

Fatigue often causes the precise performance of many TOUCH technique components to deteriorate. As with any technique, it is, therefore, helpful to start by having the traveler walk short distances, and then gradually increase the distance he walks. If fatigue does occur, it is best to rest a moment before continuing. Pressing on when the traveler's technique is beginning to deteriorate can cause him to develop poor motor habits that can be difficult to correct later.

Teaching Tips Specific to Individual Components

Grasp

The traveler may choose to use either a "Handshake" or a "Pencil" grasp. One or more of the following factors can influence this decision:

- Using the analogy of shaking hands with the cane often works to initially teach the basic position of the Handshake grasp to travelers. Using the analogy of holding a pencil, crayon, braille stylus or fork often helps to teach the basic position of the Pencil grasp.
- The diameter and weight of the cane may affect their decision. (Some travelers find it more comfortable to use a Handshake grasp with a heavier cane and a Pencil grasp with a lighter cane.)
- Some travelers find that using the Handshake grasp enables them to hold the cane more securely and to perceive tactile information more easily than using a Pencil grasp.
- Using a Pencil grasp eliminates the need to rotate one's arm when anchoring the cane to negotiate steps or curbs, or when walking up to an object that has been contacted in the travel path (see NEGOTIATING STAIRWAYS WITH A CANE and CONTACTING & EXPLORING OBJECTS techniques).
- Regardless of which grasp a traveler uses, it is often helpful to repeatedly practice handing the cane to a beginning traveler and having him practice assuming the proper grasp position quickly and efficiently. It is similarly helpful to have the traveler practice changing his grasp on the cane—moving back and forth between a Handshake grasp, a Pencil grasp, and holding the cane in the vertical position, as in the BASIC GUIDING (When the Traveler Is Carrying a Cane) technique.

Hand and Arm Position

For travelers who have difficulty feeling when their upper arm is held still at their side (neither moving nor held away from their body), have them place a file folder between their upper arm and body and instruct them to not let the folder drop as they perform the technique. Holding a folder lightly in this manner can help the traveler develop a proprioceptive awareness of the proper upper arm position.

Note: The folder should not be held so tightly that the instructor can't easily pull it free.

If the traveler has difficulty detecting shallow drop-offs, it may be necessary to elevate his wrist slightly, pointing the cane toward the ground at a sharper angle. This, however, will lessen the forward extension of the cane and can cause the cane to stick more on rough or irregular surfaces (for example, the grass at a shoreline).

If the traveler is having difficulty learning to keep his hand at midline, he can initially hold the wrist of his cane hand from underneath with his free hand. This assist should

be removed, however, as soon as the traveler is able to consistently maintain his hand at midline.

The traveler can use his free hand to self-monitor that his cane hand is held 6–8 inches (about the width of an adult hand-span) in front of his body. This assist should be removed as soon as the traveler is able to consistently maintain his hand at the proper distance from his trunk.

Wrist Motion

If the traveler has difficulty moving his wrist left and right without rotating his forearm, practice brushing salt off a table or book with the side of his hand to emphasize the kinesthetic feeling of moving the wrist without rotation.

Arc Width

Some beginning travelers initially feel that the arc is too narrow when, in actuality, it is wider than they imagine.

There are several approaches used by O&M specialists to help travelers learn to identify the correct arc width.

- One approach is to use the Tandem Cane.
- If the traveler is having difficulty identifying the correct arc width, some instructors find it helpful to provide tactile feedback to help the traveler learn the proprioceptive “feel” of the correct arc width. The instructor can do this by positioning his feet or perhaps two canes at the outer boundaries of a correct arc width and then having the traveler practice his arc (see Figure 2.11, upper diagram [a]). Some O&M specialists prefer to position the traveler next to a wall or other vertical surface (at a distance of 1–2 inches beyond the traveler’s body width on that side) and position their own feet at the outer boundary of the proper cane arc on the traveler’s other side (see Figure 2.11, lower diagram [b]). Other instructors prefer to place two objects in front of the traveler, one at each end of the arc width boundary. The traveler is then instructed to swing his cane so that the outer end of each arc lightly contacts its respective boundary. This tactile assistance is then faded as the traveler develops a kinesthetic awareness of the motion and learns to replicate the proper arc without tactile feedback. When the traveler begins to perform the TOUCH technique while walking, the arc width often will require additional refinement.

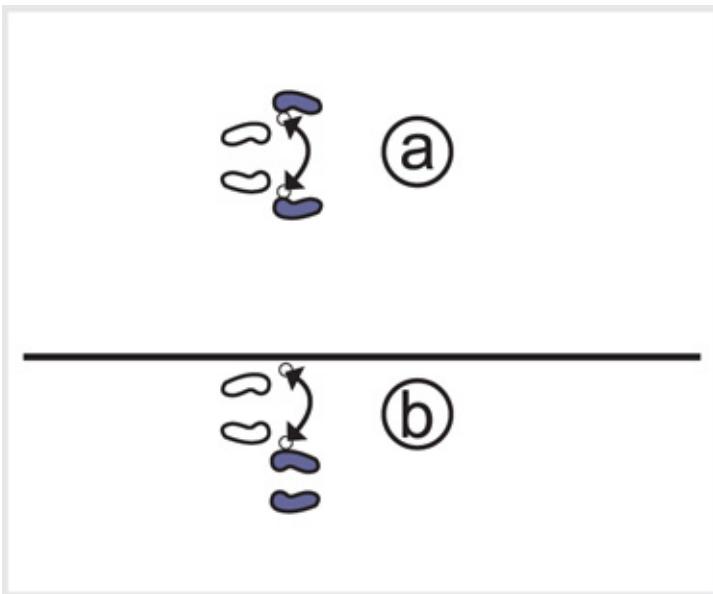


Figure 2.11

The instructor provides the traveler with tactile feedback of the correct arc width. As shown in the upper diagram (a), the instructor positions his feet at the outer boundaries of what is a correct arc width to give the traveler tactile feedback about his arc width. As shown in the lower diagram (b), the instructor positions the traveler next to a wall or other vertical surface and positions his own feet at the outer boundary of the proper cane arc on the traveler's other side to give the traveler tactile feedback about his arc width.

Arc Height

It is important not to teach the traveler to lift the cane tip at mid-arc, but to emphasize the natural up-and-down movement of the body while walking as the primary means of lifting the cane tip. Some instructors find that telling travelers to "barely clear the floor" with their cane tip in mid-arc helps them develop the concept of a low arc.

If the cane makes a loud sound as it contacts the walking surface at each end of the arc, it can indicate that the traveler is tense, and/or that the arc is too high.

Stride and Speed

Walking at normal speed helps to maintain a straight line of travel. While some beginning travelers walk slowly, it is important that they gradually increase their pace to a normal speed because a slow walking speed is often associated with an increased tendency to veer.

Because conditions in real-life travel can require the traveler to walk at a variety of speeds (slowly through a crowded mall, quickly to catch a bus, at a moderate pace for a leisurely stroll), it is important that the traveler be able to perform the TOUCH technique correctly at a variety of speeds. This real-life variability in walking speeds also emphasizes the importance of having a cane that is long enough to detect objects with

sufficient time to react no matter how fast a traveler is walking. It cannot be overstated: The traveler's cane should be long enough to enable him to walk safely at any speed he desires.

In-Step

It is generally easiest to establish an effective foot cane coordination by concentrating on walking naturally and timing the cane taps with the natural heel contacts rather than the other way around.

It often helps the traveler to walk in-step if he starts with the cane in front of the foot opposite the cane hand. As he steps forward with that foot, he swings the cane to the other side. Some instructors find the analogy of "kicking the cane out of the way of each step" helps some travelers become more aware of starting off in-step.

When the traveler is out of step, the instructor may initially need to stop the traveler, and then have him begin walking again in-step; this is done in order not to allow the traveler to practice, and thereby reinforce, poor motor performance. As the traveler refines his overall technique, the emphasis shifts to correcting his ability to remain in-step while in motion, progressing to self-monitoring and self-correction.

If the traveler is having difficulty establishing foot-cane coordination,

- Utilize music, a metronome, hand clapping, finger snapping, or one's voice to establish a consistent and steady beat. Some travelers find it easiest to coordinate the cane movement to the instructor's voice. Because the traveler is already listening for feedback and instructions from the instructor, he is attending to only one sound source.

Some travelers find that it is harder to remain in-step when performing the Constant Contact method than when performing the Standard method of the TOUCH technique. This is most common during the early stages of learning. For such travelers, it may help to teach the Standard method first, allowing the traveler to develop skill at remaining in-step, and then introduce the Constant Contact method.

Related Techniques

Basic Crossing

Basic Guiding (When the Traveler Is Carrying a Cane)

City Bus Travel

Congested Area

Direction-Taking¹

Escalators

Gas stations

¹ Knowing the TOUCH technique enables the traveler to safely cross an open area after establishing her direction of travel.

Intersection Approach
Negotiating Doors
Negotiating Stairs
Obstacle in the Travel Path
Railroad Crossings
Sidewalk Recovery
Subway Travel
Three-Point
Touch & Drag
Touch & Slide
Touch Trailing
Traversing Open Spaces¹

¹ Knowing the TOUCH technique enables the traveler to safely cross an open area after establishing her direction of travel.

CONGESTED AREA

Purpose

To travel in congested areas with maximum protection from the cane while minimizing unwanted contact with objects or other pedestrians

Prerequisite Techniques

Diagonal (for Diagonal method only)

Touch (for Touch method only)

Teaching Environments

Begin in a quiet, open, familiar area that is free of obstacles and in which the ground is level and smooth and does not require the traveler to ascend or descend steps or negotiate doors.

Progress to familiar areas that are slightly crowded. Gradually lead up to unfamiliar areas with increasing pedestrian congestion.

Practice this technique in a variety of environments and situations (e.g., stores, crowded sidewalks).

Skills

Standard

1. The traveler transfers her grasp on the cane to the bottom of the grip or to a point just below the grip.
 - Exactly how low on the shaft the traveler holds the cane is determined by the amount of congestion in the area and the amount of forward extension of the cane that the traveler desires.
 - Holding the cane lower on the shaft lessens the forward length of the cane, thereby minimizing the possibility that the cane will interfere with the movement of other people in a congested area.
 - Due to the decreased forward extension of the cane, the traveler must shorten her stride and reduce her speed to remain in-step, to avoid overstepping the cane, and to allow sufficient time to react when contacting obstacles or other pedestrians.
 - If the traveler's cane has a crook, she may wish to rotate the shaft so that the crook faces forward or to the side if she finds that it is catching on her clothing or interfering with her movement.

2. She performs the TOUCH, DIAGONAL, TOUCH & SLIDE, TOUCH & DRAG, THREE-POINT, DIAGONAL TRAILING, or TOUCH TRAILING technique (see Figure 3.01).
 - The traveler may need to hold her cane hand further than 6–8 inches ahead of her body or hold the cane with a Pencil grasp to position the cane grip where it will not be in her way as she walks.



Figure 3.01

The traveler grasps the cane either on the bottom or at a point just below the grip and performs the proper cane technique.

Turning

1. When turning, the traveler pauses and pulls the cane tip back to her feet, then turns in the new direction.
 - Pulling the cane tip close to her feet when turning a corner prevents tripping passersby as she turns.
 - Depending upon her speed of travel and the environment, the traveler may need to take 1–2 more steps after locating an opening auditorily, so that she doesn't turn prematurely.
2. When certain that there are no pedestrians in her path, the traveler clears and then continues forward in the new direction.

Common Errors and Corrections

Error:

The traveler fails to lower her grasp on the cane shaft and narrows her arc slightly.

Correction:

The traveler should lower her grasp on the cane shaft and perform a normal arc width. This lessens the forward extension of the cane, thereby minimizing the possibility that the cane will interfere with the movement of other people. Maintaining a normal arc width provides full body protection.

Error:

The traveler fails to slow her speed when performing this technique.

Correction:

When the forward extension of the cane is shortened, slowing her speed helps to ensure against overstepping where the cane has cleared.

Error:

The traveler holds the cane with the grip close to her trunk rather than lowering her grasp on the cane.

Correction:

The traveler should lower her grasp on the cane shaft and hold her hand at least 6–8 inches in front of her body. This shortens the forward length of the cane while still leaving sufficient time for the traveler to react when the cane contacts objects in her travel path.

Error:

The traveler fails to remain in-step when performing this technique.

Correction:

The traveler should remain in-step when performing this technique. This allows the cane tip to contact the ground two steps ahead of each foot, previewing the approximate area where the foot will fall next, and, thereby, ensuring that the cane will detect any obstacles in the traveler's path in sufficient time for him to react.

Notes for Teachers

This technique is primarily used inside stores or other public buildings, along heavily traveled sidewalks, and when riding on public transportation such as on a bus or subway. It can also be used when exiting a store or entering a hallway to avoid tripping other pedestrians.

Practicing this technique in congested areas can provide many opportunities for incorporating instruction and practice in orientation skills and soliciting assistance.

The following techniques are not true prerequisites to learning the CONGESTED AREA technique. However, knowing these techniques may provide the traveler with additional opportunities to practice and apply the CONGESTED AREA technique.

- Touch & Drag
- Touch & Slide
- Three-Point
- Touch Trailing
- Diagonal Trailing

Related Techniques

Basic Guiding (When the Traveler Is Carrying a Cane)¹

City Bus Travel

Elevators

Escalators

Revolving Doors

Subway Travel

¹ Knowing the CONGESTED AREA technique enables the traveler to avoid tripping passersby with her cane when walking with a guide in a congested area.

TOUCH & SLIDE

Purpose

This technique is used to detect textural changes and subtle drop-offs in the travel path. One common use is to identify the boundary between the sidewalk and the street when approaching an intersection where a curb ramp or blended curb is present.

Prerequisite Techniques

Touch

Teaching Environments

Begin in a quiet, open, familiar area that is free of obstacles and in which the ground is level and smooth and does not require the traveler to ascend or descend steps or negotiate doors.

Progress next to a quiet, familiar area with an easily discernable drop-off (e.g., descending stairs, down-curb) in the travel path for the traveler to detect.

Practice using this technique to detect increasingly subtle drop-offs and texture changes (e.g., borders between curb ramps and the street, borders between cement sidewalks and asphalt parking areas).

Practice this technique in a variety of environments in indoor, residential, small business, and urban areas.

Skill

1. The traveler performs the TOUCH technique, but lets the cane tip remain in contact with the walking surface and slide slightly forward at the end of each arc. She can do this either by keeping the same arc width as the TOUCH technique and letting the cane tip slide directly forward upon each contact (see Figure 4.01) or by touching the cane tip down at midline (or in front of each foot) and letting it slide forward at a 30-degree angle to the outer edge of each arc (see Figure 4.02).
 - As the traveler moves forward, the cane tip slides passively forward from the initial point of contact. The traveler does not actively push the cane forward.
 - To detect very subtle texture changes, however, the traveler can exert slightly increased downward pressure on the cane tip.
 - Because the cane tip is held in contact with the walking surface, the arc cycle typically takes longer to complete. The traveler should, therefore, shorten her stride and slow her pace to remain in-step. Slowing the pace also provides greater reaction time.



Figure 4.01

Two photos show how the traveler maintains the standard arc width and lets the cane tip slide directly forward (indicated here by white arrows) upon each contact with the ground.



Figure 4.02

Two photos show how the traveler touches the cane tip down either at midline or in front of each foot and lets it slide forward at a 30-degree angle to the outer edge of each arc (indicated here by white arrows).

Common Errors and Corrections

Error:

The traveler actively pushes the cane tip forward along the ground with each step.

Correction:

Actively pushing the cane tip forward with each step is an unnecessary effort and can sometimes lead to an excessively wide arc width. Simply holding the cane tip on the ground at the end of each arc allows the forward motion of the traveler's body to slide the tip forward while facilitating a normal arc width.

Error:

The traveler fails to remain in-step while performing this technique.

Correction:

The traveler should remain in-step when performing this technique. This allows the cane tip to contact the ground two steps ahead of the traveler's foot, thereby previewing approximately where the foot will fall and ensuring that the cane will detect any obstacles in her path. It may be necessary for the traveler to slow her walking speed to do this easily.

Notes for Teachers

While this technique can also be used to detect more pronounced drop-offs, such as down-curbs and steps, it does require more effort to perform than does the standard TOUCH technique. It is, therefore, generally used selectively in situations in which the traveler suspects that she is approaching a texture change, curb ramp, blended curb, or other surface change that may be more difficult to detect using the TOUCH technique.

This technique requires good coordination and can be challenging to learn and to perfect. In addition, some people find this technique more difficult to perform than the TOUCH technique. For these reasons some people prefer to use the TOUCH technique (Constant Contact method) to detect texture changes and shallow drop-offs.

Some travelers find this technique useful when walking on a sidewalk that is covered with such things as wet leaves or snow. The traveler can use this technique to poke beneath the surface to feel the sidewalk. Some travelers also find it to be effective in identifying deep puddles in their travel path.

Related Techniques

Escalators

Intersection Approach (Curb Ramps & Blended Curbs)

Subway Travel

SHORELINING

DIAGONAL TRAILING

Purpose

This technique is used to follow a vertical surface or to locate specific objectives along that surface by using a cane. This skill positions the cane to also provide limited lower body protection while walking. Because this technique does not reliably detect all obstacles or elevation changes in a traveler's path, however, it is typically used only in familiar, controlled environments in which there are no elevation changes (e.g., descending stairs).

Prerequisite Techniques

Diagonal

Teaching Environments

Begin in a quiet indoor area in which there is a smooth vertical surface to follow with the cane. The surface should be free of obstacles (e.g., cabinets), and the floor should be tile or another smooth surface that will allow the cane to slide forward easily.

Progress to quiet indoor environments in which there are objects that will be contacted along the vertical surface being followed (e.g., doors, water fountains, furniture, intersecting walls or hallway openings).

Progress next to areas that have rougher floor or trailing surfaces along which the cane may not slide as easily (e.g., carpet, rubber baseboards on walls, rougher wall surfaces, such as brick).

Skills

Standard

1. Walking slowly next to the vertical surface to be followed, the traveler performs the DIAGONAL technique with the cane tip either: (a) touching lightly in the junction of the vertical surface and the floor or (b) touching the surface 1–4 inches above the floor (see Figures 5.01 and 5.02). She holds the cane in the hand opposite the vertical surface being followed.
 - A light touch facilitates trailing and helps prevent the cane tip from catching on textural or other inconsistencies on the trailed surface.
 - It is easiest to slide the cane tip in the junction of the vertical and walking surfaces. On rough walking surfaces (e.g., crevices, carpet), maintaining the tip 1–4 inches above the floor helps keep the tip from sticking. This position, however, can be difficult or tiresome to monitor and maintain. If the traveler does place the cane tip 1–4 inches above the junction, it is important that the

cane tip not be allowed to rise above the 4-inch height to minimize the possibility of the tip contacting a person or object inappropriately. Some travelers touch the cane tip to the ground periodically to verify that it has not risen too high.

- Holding the cane in the hand opposite the vertical surface positions the cane shaft across the traveler's body to provide maximum protection from low objects in the travel path (see Figure 5.03).
- The traveler should maintain a 4–6 inch distance from the vertical surface being trailed. Moving too close may cause the traveler to rub her shoulder or another part of her body against the surface or against objects hanging on it (e.g., pictures on a wall). Moving further away makes it necessary for the traveler to extend the cane too far laterally to maintain contact with the surface. This, in turn, can decrease the forward protection afforded by the cane and decrease body coverage on the side away from the wall; it may also cause some travelers to turn their body toward the wall rather than maintain a parallel alignment to the wall.
- Walking at a reduced pace will allow the traveler greater time to react when the cane detects objects in the travel path.



Figure 5.01

The traveler performs the DIAGONAL technique with the cane tip touching lightly in the junction of the surface and the floor.



Figure 5.02

The traveler performs the DIAGONAL technique with the cane tip touching the surface 1–4 inches above the floor.



Figure 5.03

The traveler holds the cane in the hand opposite the vertical surface for maximum protection from low objects in the travel path.

Crossing an Opening

A method for crossing an opening (e.g., doorway or intersecting hallway) safely and efficiently when following a wall or other vertical surface using the DIAGONAL TRAILING technique

1. Upon reaching the edge of the opening, the traveler anchors the cane at the edge, walks up to it, and pauses to listen for people passing through the opening.
 - Anchoring the cane and pausing allows the traveler time to listen to verify that the path is clear before proceeding across the opening. Anchoring the cane also

prevents it from getting in the way of people who are passing through the opening.

2. When the travel path is clear, the traveler crosses the opening using the DIAGONAL technique.
 - When crossing a wide opening, some travelers find it helpful to overextend their cane tip slightly in the direction of the opening in order to more easily locate the wall (or other vertical surface) on the opposite side of the opening. This might be done, for example, to ensure they find the wall on the other side of a wide hallway even if they veer slightly away from the opening while crossing.

Note: To cross an open doorway, the traveler uses the same method that she used to cross the hallway.

Turning

To turn a corner safely and with optimum cane protection when using the DIAGONAL TRAILING technique

1. Upon reaching the edge of an open doorway, intersecting hallway, or pathway, the traveler anchors the cane at the edge, walks up to it, and pauses to listen for people in her projected path.
 - Anchoring the cane and pausing allows the traveler time to listen to verify that the path is clear before turning and also prevents the traveler from tripping people with the cane or from bumping into them when turning the corner.
2. When the travel path is clear, the traveler maintains the cane tip anchored against the edge and turns the corner. She then continues traveling.

Common Errors and Corrections

Error:

The traveler holds the cane in the hand that is closest to the trailed surface.

Correction:

Holding the cane in the hand that is opposite the trailed surface positions the cane across the traveler's body to provide maximum protection.

Error:

The traveler fails to maintain the cane in the proper diagonal position, but allows the cane tip to drift backward along the trailed surface.

Correction:

Maintaining the proper diagonal position and not allowing the cane tip to drift backward along the trailed surface ensures that the traveler will have sufficient time to react when her cane contacts objects.

Error:

The traveler fails to maintain the cane in the proper diagonal position, but allows the cane tip to drift forward along the trailed surface.

Correction:

Maintaining the proper diagonal position and not allowing the cane tip to drift forward along the trailed surface ensures that the cane will be positioned to provide optimum protection of the traveler's body on the side away from the surface. It also helps the traveler to maintain a forward body alignment and not have her trunk turn inadvertently toward the wall.

Error:

The traveler allows the cane tip to rise more than about 4 inches above the floor.

Correction:

Keeping the cane tip only 1–4 inches above the walking surface minimizes the possibility that the traveler's cane will contact someone or something inappropriately.

Error:

The traveler fails to pause and anchor her cane against the edge of an opening (e.g., hallway or doorway) when her cane tip detects it.

Correction:

Pausing and anchoring the cane against the edge of an opening before crossing prevents the cane from interfering with people who are exiting the opening. It also allows the traveler time to listen and verify that the path is clear before proceeding to cross the opening.

Error:

The traveler fails to pause before turning at an opening.

Correction:

Pausing and anchoring the cane at the edge of an opening (while listening for people to exit) prevents the traveler from tripping people with her cane or from bumping into them as she turns into the opening.

Error:

The traveler's body drifts away from the trailed surface.

Correction:

Maintaining a 4–6 inch distance from the trailed surface while trailing enables the traveler to keep the cane in the proper position for optimum protection. Drifting away from the trailed surface lessens the forward protection of the cane and may cause the traveler to rotate her trunk toward the surface, thereby losing her forward alignment.

Error:

The traveler fails to slow her pace as she performs this technique.

Correction:

Slowing her pace is important due to the limited protection provided by the cane. A slower pace provides the traveler with more reaction time to respond to objects that the cane detects.

Notes for Teachers

Because the traveler is likely to encounter more obstacles when following a wall than when walking in open space, this skill can sometimes be more cumbersome to use than standard DIAGONAL or TOUCH techniques. For this reason, this skill is generally used selectively and only for short distances.

This technique can be used in conjunction with the TRAILING technique when the traveler is looking for a landmark at hand level. While it may seem natural to some travelers to always trail with the free hand, it is recommended that the traveler not do so unless she is trying to locate a specific objective that the cane cannot detect. In this way, the traveler can avoid unnecessary and unwanted hand contact with objects along the trailed surface.

Because the traveler will likely, at various times, need to follow a wall on either her left or her right side, she should learn to perform this technique proficiently with each hand.

Because this technique provides greater contact with the environment, it is often used to a greater degree by travelers who have difficulty maintaining orientation or a straight line of travel in open space.

Because the position of the cane tip against the vertical surface provides more proprioceptive feedback to assist a straight line of travel than is available when performing the DIAGONAL technique, some travelers find that DIAGONAL TRAILING is often the easier of the two techniques to perform. For this reason, some instructors may teach DIAGONAL TRAILING before teaching the DIAGONAL technique. Other instructors, however, feel that to do so would result in some travelers developing an unnecessary dependence on having a surface to follow and would make it more difficult to learn straight line travel and the DIAGONAL technique later. This is a decision that should be made on an individual basis for specific travelers.

Related Techniques

None

TOUCH & DRAG

Purpose

To follow the edge of a raised walking surface from above (e.g., elevated walkways and platforms) in order to remain parallel to the edge or to locate an objective along it (e.g., following the curb edge of a sidewalk in order to locate the pole at a bus stop)

This technique can also be used to follow either a raised or level shoreline (e.g., curbs, grass line, and the transitions between surfaces of different textures, such as a concrete sidewalk and the asphalt pavement of gas stations); it can be used to establish and maintain a straight line of travel along the shoreline or to locate objectives along it, such as an intersecting sidewalk or hallway. Because the cane tip is in constant contact with the ground when moving in an arc toward the shoreline, this skill is especially effective when following a shoreline that curves.

Prerequisite Techniques

Touch

Teaching Environments

Begin in a quiet, familiar, environment that is free of obstacles and intersecting paths and that has a distinct, straight, and level shoreline to follow. Gradually introduce objects along the shoreline for the traveler to locate.

Progress next to quiet, unfamiliar environments. Introduce shorelines that are curved or irregular and locations that have less distinct shorelines to follow (e.g., the seam between two similar surfaces, such as concrete and asphalt—although this level of skill can be difficult for some travelers to achieve).

Progress next to following shorelines of surfaces that are lower than the walking surface (e.g., the curb edge of a sidewalk).

Lead up to performing this technique in areas of increased pedestrian congestion (e.g., near busy bus stops).

Practice this technique in a variety of environments and situations (e.g., following a curb to locate the pole at a bus stop, following the inside shoreline of a sidewalk to avoid veering into a gas station or parking lot, and traveling in areas without sidewalks).

Skill

1. Walking next to the shoreline, the traveler performs the TOUCH technique with the following modifications:
 - A standard arc height is used when moving the cane from the shoreline to the opposite side. The cane tip is then dragged along the ground on the return arc toward the shoreline (see Figure 6.01).
 - The traveler should stay close to the shoreline to maintain a standard, symmetrical arc.
 - To remain in-step and to provide greater reaction time, the traveler should shorten his stride and reduce his speed.
 - If the traveler misses two consecutive contacts with the shoreline, he may have veered away from it. He should angle back to relocate it.



Figure 6.01

In the photo on the left, the traveler performs a standard arc when moving the cane from the shoreline to the opposite side. The photo on the right shows how the traveler drags the cane tip along the ground on the return arc toward the shoreline. The direction of cane movement in both photos is indicated by a white arrow.

Common Errors and Corrections

Error:

After missing two consecutive cane contacts with the shoreline, the traveler fails to pause, turn toward the shoreline, and then return to it.

Correction:

The traveler should pause, turn toward the shoreline, and then return to it after missing two consecutive cane contacts with the shoreline. This minimizes the chances of missing an objective along the shoreline.

Error:

The traveler fails to remain in-step when performing this technique.

Correction:

Remaining in-step allows the cane tip to contact the ground two steps ahead of each foot, best previewing the area where his next step will fall and ensuring that the cane will detect any obstacles in his path in sufficient time for him to react.

Error:

The traveler fails to maintain an arc width of 1–2 inches beyond his body width on the side away from the shoreline.

Correction:

Covering body width plus 1–2 inches on each side ensures that the cane will contact objects on the path before the traveler bumps into them.

Error:

The traveler fails to maintain a distance of 1 foot or less from the shoreline as he follows it.

Correction:

Maintaining a distance of 1 foot or less from the shoreline keeps the traveler close enough to the shoreline to contact it easily with each cane arc on that side. This, in turn, eliminates the need to reach the cane too far laterally in order to reach the shoreline and avoids the resulting decrease in forward protection afforded by the cane. It also eliminates the possibility that people might try to pass the traveler on the shoreline side where they might trip on the cane.

Notes for Teachers

Because the traveler will at some time need to follow a shoreline on either side of his body, he should learn to perform this technique on each side.

Related Techniques

Areas Without Sidewalks

City Bus Travel

Gas Stations

Negotiating Stairs

Obstacle in the Travel Path¹

Railroad Crossings

Recovery from a Veer

Sidewalk Recovery

Subway Travel

¹ If the traveler encounters an obstacle in her walking path, she can use the TOUCH & DRAG technique to follow around the obstacle to its other side and then resume her desired line of travel.

TOUCH TRAILING

Purpose

This technique is used to locate specific objectives along a shoreline (e.g., wall, grass line) while detecting drop-offs and low objects in the travel path. Also called “two-point trailing,” this technique is generally not used for long distances but can be very useful to establish an initial line of travel, realign after a veer, or to locate landmarks (e.g., doorways or intersecting paths) along the trailed surface.

Prerequisite Techniques

Touch

Teaching Environments

Trailing Along a Vertical Surface

Begin in a quiet, open, familiar area with a wall or vertical surface to be trailed. The surface should be free of obstacles and should have no interruptions or openings (e.g., doorways).

Progress next to quiet, unfamiliar environments. Introduce openings (e.g., doorways), objects (e.g., stairs), and surface changes (e.g., closed doors) to detect. Lead up to using this technique in more congested areas.

Practice this technique in a variety of environments and more complex settings (e.g., to locate a building entrance that is recessed and/or accessed only by ascending steps).

Trailing Along a Horizontal Surface

Begin on a quiet, familiar straight sidewalk that has a distinct, regular shoreline that is level with the sidewalk (e.g., grass line and sidewalk). Grass is one of the easiest shorelines to detect with a cane, but surfaces such as dirt or gravel can also be used. The shoreline should be free of intersecting sidewalks, elevation changes, or pedestrian traffic.

Progress to a quiet, familiar area that has intersecting sidewalks and driveways to detect. Lead up to using this technique in unfamiliar and more congested areas.

Skills

Along a Vertical Surface

Use this to locate objectives along a wall or other vertical surface. This skill allows the cane to also provide optimum lower body protection while walking.

- Walking slowly next to the wall or other vertical surface to be followed, the traveler performs the TOUCH technique, allowing her cane tip to lightly contact the vertical surface, 1–4 inches above the floor or ground.
 - Maintaining a normal arc width on the side away from the trailed surface will ensure that the traveler has protection of her full body width. She may choose, however, to maintain a distance of about 4–6 inches from the vertical surface being trailed. Moving too close may cause the traveler to rub her shoulder or another part of her body against the surface or objects hanging on it. Moving further away makes it necessary for the traveler to extend the cane too far laterally to maintain comfortable contact with the surface. This, in turn, can decrease the forward protection afforded by the cane and decrease body coverage on the side away from the wall; it also may cause some travelers to turn their body toward the wall rather than to maintain a parallel alignment to the wall. If the traveler drifts far enough away from the vertical surface, pedestrians who do not notice her cane may try to pass by walking between the traveler and the surface.
 - The traveler must keep in-step as she performs this technique. A slower pace may help her to do so.
 - If the traveler's cane tip fails to contact the trailed surface twice in a row (other than at a known intersecting hallway or walkway), the traveler should angle back toward the vertical surface and reestablish contact with it.

Along a Horizontal Surface

This method is commonly used to follow a shoreline between two level surfaces. It works best in environments where the shoreline is straight and the surfaces have significantly different textures. When presented with a shoreline that is not very distinct, is curving, or is irregular in shape, most travelers will use the TOUCH & DRAG or TOUCH (Constant Contact) technique.

Note: This skill is generally used by travelers who have some functional travel vision. Travelers who do not have functional travel vision usually find it easier to use the TOUCH & DRAG and Touch (Constant Contact) techniques to follow a horizontal shoreline.

- The traveler walks next to the shoreline using the TOUCH technique; she increases the arc width on the shoreline side to touch the cane tip down 1–2 inches beyond the edge of the shoreline.
 - The traveler can verify that she is beginning travel with a parallel alignment to the shoreline by:
 - Sliding her cane along the edge of the shoreline (see Figure 7.01);
 - Sliding her near foot to the shoreline and then extending the cane tip forward so that the tip is also in contact with the edge of the shoreline (see Figure 7.02).
 - The traveler may need to slow her pace to remain in-step.

- A light touch will help prevent the cane tip from sticking in grass along the shoreline.
- If the cane tip does stick in the shoreline, the traveler should pause and pull it out before continuing to walk. Doing so will prevent her from overstepping where the cane has cleared.
- If the cane tip consistently sticks in a grass shoreline, sometimes lowering the cane hand slightly will help prevent this.
 - A cane that catches excessively may indicate that the traveler's cane arc is too high, causing the cane to contact the ground with greater force. Or, in reverse, a cane arc that is too high may be symptomatic of a cane that is sticking.
- Canes that are shorter in relation to the traveler's height may catch more easily in grass shorelines than longer canes due to the fact that they contact the ground at a sharper angle (see Figures 7.03).
- If the traveler's cane tip fails to contact the shoreline twice in a row (other than at a known intersecting walkway), the traveler should angle back toward the shoreline and reestablish contact with it.



Figure 7.01

The traveler slides her cane along the edge of the shoreline (indicated here by a white arrow) to verify that she is aligned parallel to it.



Figure 7.02

The traveler verifies that she is aligned parallel to the shoreline by placing the side of her near foot next to it and extending the cane tip forward to also contact the shoreline (indicated here by a white arrow).



Figure 7.03

Canes that are shorter in relation to the traveler's height contact the ground at a sharper angle. The cane in the photo on the left is shorter than the cane in the photo on the right.

Crossing an Opening

Use this skill to cross an opening (e.g., open doorway or intersecting hallway) efficiently and safely when following a wall or other vertical surface using the TOUCH TRAILING technique.

1. When the traveler's cane tip contacts an opening (e.g., open doorway or intersecting hallway), she anchors the cane at the edge of the opening and walks up to it.

2. The traveler listens for people passing through the opening. When it is clear, the traveler crosses the opening using the TOUCH technique.
 - When crossing the opening, the traveler may choose to use alignment components of the TRAVERSING OPEN SPACES technique (e.g., trunk rotation, squaring off) to more easily locate the wall (or other vertical surface) at the opposite side of the opening.

Turning

Use this skill to turn a corner safely and with optimum cane protection when using the TOUCH TRAILING technique.

1. When the traveler's cane tip contacts an opening (e.g., intersecting hallway), she anchors her cane at the edge of the opening and walks up to it.
2. Listening to be certain that no pedestrians are in her travel path, the traveler turns and then resumes travel.

Locating a Narrow Opening or Objective

To locate narrow openings or objectives that the cane might miss when using the Standard method of TOUCH TRAILING

1. The traveler follows the vertical surface, performing a combination of TOUCH TRAILING and CONGESTED AREA techniques.
 - The shortened forward extension of the cane in the SHORTENED CANE technique minimizes the chances that the cane will skip over narrow openings or objectives.
 - Some travelers may choose to simply slow their pace, relying on their shorter step lengths (that naturally come with reduced speed) to minimize the chances that the cane will skip over narrow openings or objectives.

Locating an Objective Higher Along a Vertical Surface

To locate an objective along a vertical surface that is 6–8 inches above ground level

1. The traveler performs the standard TOUCH TRAILING technique, allowing her cane tip to contact the vertical surface 6–8 inches above the ground (see Figure 7.04).



Figure 7.04

TOUCH TRAILING can be used to locate a building entrance that is recessed and only accessed by ascending steps. The cane tip must contact the vertical surface at least 6–8 inches above the ground.

Common Errors and Corrections

Error:

The traveler fails to maintain the arc width on the non-shoreline side at 1–2 inches beyond her body width.

Correction:

Maintaining the arc width on the non-shoreline side at 1–2 inches beyond her body width positions the cane to detect objects in the travel path on that side with a small added margin for safety.

Error:

The traveler fails to remain in-step when performing this technique.

Correction:

Remaining in-step allows the cane tip to contact the ground two steps ahead of each foot, best previewing the area where her next step will fall and ensuring that the cane will detect any obstacles in her path in sufficient time for her to react.

Error:

The traveler fails to pause at the edge of an opening before crossing it.

Correction:

The traveler should pause at the edge of an opening and anchor her cane, listen for people to exit, and then cross when clear. This positions her optimally to hear, and be visible to, people exiting the opening. It also ensures that the traveler does not trip people with her cane or bump into them while crossing the opening.

Error:

When looking for a narrow objective along the shoreline, the traveler fails to hold the cane lower on the shaft.

Correction:

Holding the cane lower on the shaft effectively decreases its forward length. This ensures that the cane will not miss narrow openings or landmarks.

Error:

After missing two consecutive cane contacts with the shoreline or trailed surface, the traveler fails to pause, turn toward it, and then return to it.

Correction:

The traveler should pause, turn toward the shoreline or trailed surface, and then return to it after missing two consecutive cane contacts with it. This minimizes the chances of missing an objective along the shoreline or trailed surface.

Error:

When trailing a horizontal shoreline such as a grass line, the traveler fails to slow her pace when the cane sticks in the ground.

Correction:

The traveler should slow her pace when the cane sticks in the ground. This ensures against overstepping where the cane has cleared and potentially bumping into objects in the travel path.

Error:

The traveler walks at a distance of over 1 foot away from the shoreline or trailed surface as she follows it.

Correction:

Walking at a distance of 1 foot or less (ideally 4–6 inches) from the shoreline or trailed surface enables the traveler to follow it without using an excessively wide arc. A normal arc requires less effort to perform and keeps the traveler close enough to the trailed surface to avoid blocking the travel path for other people.

Notes for Teachers

TOUCH TRAILING can be used in conjunction with hand TRAILING when looking for objectives that are too high for the cane tip to detect. TOUCH TRAILING can also be used in conjunction with the CONGESTED AREA technique when traveling in crowded areas or when looking for narrow objectives along a wall.

Related Techniques

Areas Without Sidewalks

City Bus Travel

Obstacle in the Travel Path¹

Subway Travel

Three-Point

Vehicle in the Travel Path

¹ If the traveler encounters an obstacle in her walking path, she can use the TOUCH TRAILING technique to follow around the obstacle to its other side and then resume her desired line of travel.

THREE-POINT

Purpose

To follow an elevated shoreline (e.g., a curb) from below to locate an objective above the shoreline

One common use of this skill is to follow along a curb to locate the sidewalk after an unintentional veer during a street crossing. It can also be used to detect doors or openings that are located above the walking surface.

Prerequisite Techniques

Touch Trailing

Teaching Environments

Begin in a quiet environment (e.g., a curb along a quiet residential street), following a straight shoreline that has a distinct difference in elevation (at least 4 inches) from the walking surface.

Progress to following shorelines that have decreasing differences in elevation from the walking surface.

Lead up to following shorelines that are curved or irregular.

Practice this technique in a variety of environments and situations (e.g., following a veer during a street crossing).

Skill

- Walking next to and below the shoreline, the traveler performs a variation of the TOUCH technique in which she touches the cane tip to the ground at three points per cycle (see the three photos in Figure 8.01).
 - The traveler touches the cane away from the shoreline.
 - She moves the cane (with a normal arc width and height to touch the vertical surface of the shoreline) or drags the cane (as in the TOUCH & DRAG technique) to contact the bottom edge of the shoreline.
 - The traveler touches the cane tip to the surface above the shoreline, extending the cane arc onto the higher surface only far enough to locate the objective being sought (generally no more than 6–12 inches from the shoreline).

Note: Staying near the shoreline she is following enables the traveler to extend the cane sufficiently far onto the higher surface to locate the objective. This also prevents pedestrians from walking between the traveler and

the shoreline. This position also enables the traveler to maintain a safer distance from traffic on streets with no parking lane or where traffic comes close to the curb.

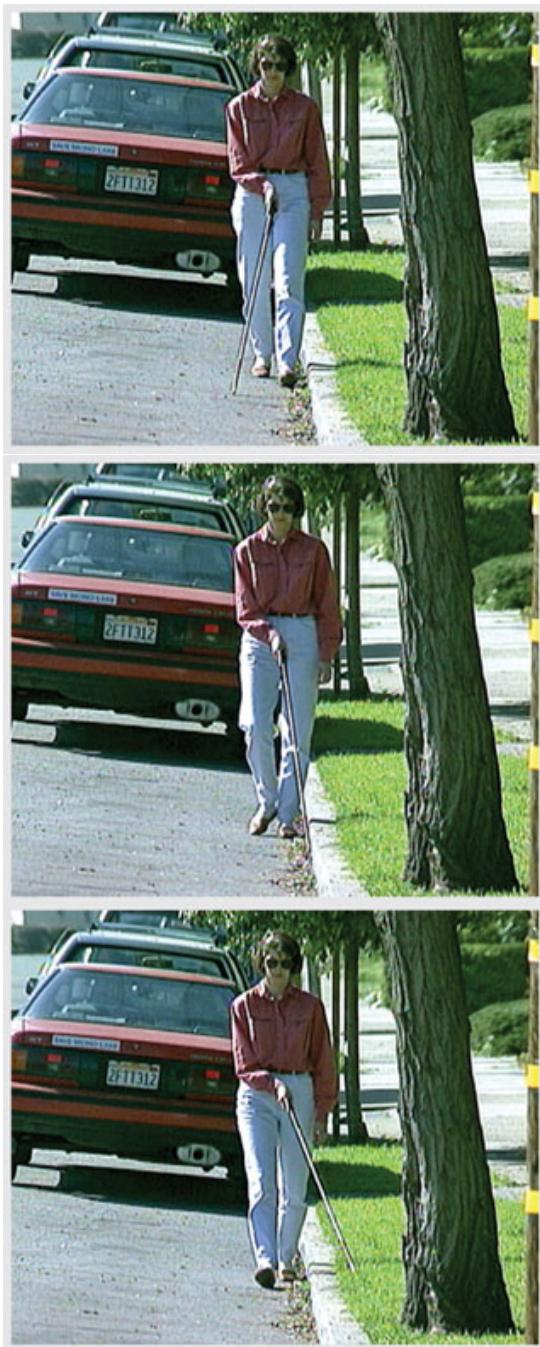


Figure 8.01

As shown in three stacked photos, the traveler touches the cane tip to the walking surface (top), to the vertical side of the shoreline (middle), and to the surface above the shoreline (bottom).

2. The traveler repeats the sequence until she locates the objective.
 - The traveler's posture, arm position, grasp, and wrist action remain as in the TOUCH technique.
 - The traveler walks in-step by coordinating her heel strikes with either:
 - The first and third contacts of the cane tip on the walking surface, or
 - The first and second contacts of the cane tip (on the lower elevation and the side of the shoreline). Unless the traveler is able to move the cane to tap above the shoreline very quickly, she may find it necessary to pause while she does so in order to stay in-step.

Note: The traveler's stride length and speed of travel may have to be reduced to remain in-step.

Common Errors and Corrections

Error:

The traveler fails to touch the cane tip to the side of the shoreline when swinging the cane from a position below the shoreline to a position above the shoreline.

Correction:

Touching the cane tip to the side of the shoreline when swinging the cane from a position below the shoreline to a position above the shoreline best enables the traveler to keep track of the shoreline's location while she is walking. Contacting the side of the shoreline when moving the cane in the other direction is unnecessary and can be awkward.

Error:

The traveler fails to remain in-step when performing this technique.

Correction:

Remaining in-step allows the cane tip to contact the ground two steps ahead of each foot, best previewing the area where his next step will fall and ensuring that the cane will detect any obstacles in her path in sufficient time for her to react. It may be necessary for the traveler to slow her walking speed to do this easily.

Notes for Teachers

This technique is also called the "Three-Point Trailing" and "Three-Point Touch" technique.

As with many cane techniques, it is often helpful to practice this technique in a stationary position prior to performing it while walking.

An effective musical rhythm for learning this technique is "one and two." (The cane tip touches down on the side of the arc away from the shoreline at "one," then contacts

the side of the shoreline at “and,” and then contacts the ground above the shoreline at “two”; see Figure 8.01, above.)

On occasion, a modified version of this technique can also be used to trail a shoreline above a drop-off to look for a landmark below the shoreline edge (e.g., following the curb edge of a sidewalk while looking for a storm drain below the curb that serves as a landmark for locating the crosswalk to cross the street that forms the top of a “T” intersection).

Related Techniques

Negotiating a Median Strip¹

Negotiating Stairs

Recovery from a Veer

¹ If it is necessary to step up onto a median strip during a street crossing but there is an object on the strip that blocks her path (e.g., bush or other plantings), the traveler may use the THREE-POINT technique to find a clear place onto which she can step and then prepare to complete her crossing at the appropriate time.

NEGOTIATING DOORS & STAIRS

NEGOTIATING DOORS

Purpose

To negotiate closed doors when using a cane

Prerequisite Techniques

Contacting & Exploring Objects¹

Negotiating Doors—With a Guide (When the Traveler Is Carrying a Cane)²

Touch

Teaching Environments

Begin in a familiar area that is quiet and free from a lot of pedestrian traffic. For initial instruction, use indoor, lightweight, spring-loaded doors where wind and other weather factors will not interfere with teaching, and where there are no steps to walk up or down immediately before or after going through the doorway.

- Lightweight self-closing doors are especially important when working with very young or elderly travelers who may lack the strength to handle a heavy door.

Progress to areas that have heavier self-closing doors, including those that lead to the outside. Gradually lead up to areas in which there is heavier pedestrian traffic.

Introduce the traveler to a variety of doors that have different handles to be located by the cane (e.g., bars, U-shaped handles, knobs, push plates) and doors on which the handles are in different positions (left/right, high/low). Also introduce the traveler to manual-closing doors and to doorways that have a step going either up or down immediately before or after the doorway.

Practice this technique in a variety of environments and travel situations that involve negotiating doors.

¹ The Contacting Objects portion of the CONTACTING & EXPLORING OBJECTS technique is used when the traveler's cane contacts the closed door. It enables her to maintain cane contact with the door and to position the cane properly (for locating the door handle) as she walks up to the door.

² Prior experience negotiating doors using the NEGOTIATING DOORS—With a Guide (When the Traveler Is Carrying a Cane) technique may lessen the initial anxiety that some travelers feel when negotiating doors without a guide.

Skills

Self-Closing Doors

1. Upon contacting a door, the traveler uses the CONTACTING & EXPLORING OBJECTS technique to walk up to an extended-arm distance from the door. He positions the cane vertically with its shaft flat against the door.
 - The crook of the cane, if present, should be positioned toward the traveler. This allows the cane shaft to lay flat against the door and ensures that the shaft will not pass over small door handles without detecting them.
 - The traveler can apply slight pressure against the door while walking up to his cane. Unless the door is latched closed, doing so will tell the traveler whether the door opens by pulling or pushing and, if the latter, whether it opens to the right or to the left.
 - The extended arm distance places the traveler at a greater distance from the door and allows more time for him to react by moving away from the door should someone suddenly open it from the other side.
2. Maintaining an extended-arm distance from the door, the traveler lifts the cane so that the tip is about 1 inch above the ground. He slides the cane left and right along the door to locate the door handle (lifting the cane is especially important on carpeted floors or rough walking surfaces). If the traveler is unable to reach each side of a door (or if he contacts the wall and must search to each side to locate the door), he can transfer the cane from one hand to the other in order to extend his reach further.
 - Searching with the cane is more efficient than searching with one's hand because the cane covers a larger area. Using the cane also helps to protect the traveler's hand from getting caught in hinges or being injured on rough door parts.
 - If the door handle or push bar are not located, the door may have a push plate that is flush with the face of the door (see Figure 9.01).
 - If the door has a push bar or push plate (indicating it opens by pushing rather than by pulling), the traveler can push gently on the door to determine whether it opens to the left or to the right.

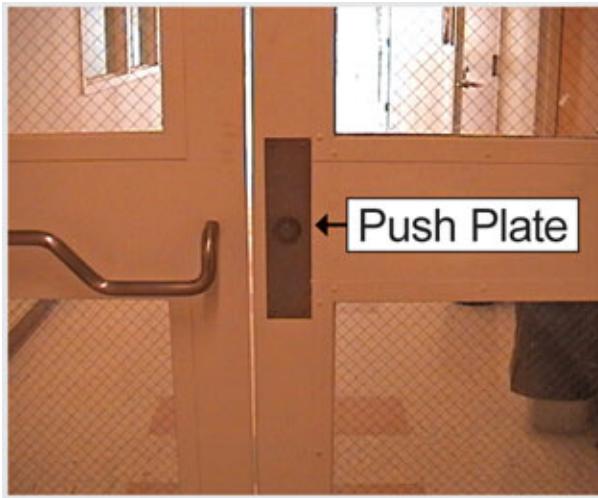


Figure 9.01

These doors have a push bar on the left and a push plate on the right; the push plate is labeled.

3. When the traveler locates the doorknob, door handle or push bar, he transfers the cane, if necessary, to the hand nearest the latch side and then slides his free hand down the cane shaft to locate the doorknob or door handle.
 - The traveler may choose to anchor the cane shaft against the door handle or push bar before sliding his hand down the shaft to locate them. While travelers with good kinesthetic awareness may not feel the need to anchor the shaft in this way and may simply reach for it with their free hand, other travelers may find that anchoring the shaft in this manner is the most efficient way to locate the door handle or push bar.
4. The traveler opens the door.
5. Using the CONGESTED AREA technique (Diagonal or Touch technique, depending upon the environment and upon the traveler's familiarity with it), the traveler clears and walks through the doorway; he lets the door swing closed behind him. He then returns the cane to his original hand, if necessary.

Manual-Closing Doors

To negotiate manual-closing doors, the traveler performs the technique as described above for self-closing doors, but instead of letting the door swing closed behind him he locates the doorknob on the other side of the door. After passing through the doorway, the traveler pushes or pulls the door closed behind him.

Automatic Doors

To negotiate automatic doors that swing toward the traveler (instead of moving sideways) when opening

Automatic doors have a button located either on a pole or other surface that opens the door when pressed (see Figures 9.02a and 9.02b). The button is located several feet in front of the door so that the person will not be hit by the opening door as he or she presses the button.



Figure 9.02a

Automatic doors can often be activated by pushing on a special plate (circled here, in white) that is mounted on a nearby wall.



Figure 9.02b

The special plate to activate an automatic door is sometimes found on a post that is located near the door (circled here, in white).

Automatic doors may swing open, or the doors may slide to the side. If the door swings open, it may be designed for one-way traffic (i.e., in or out). If the traveler contacts a door designed for pedestrian traffic moving in the opposite direction to his travel, the door may not open or he may perceive pedestrians approaching through that doorway. In this case, the traveler should step out of the way of oncoming pedestrians and then

search with his cane to each side for a mat or a railing between the doors (see Figure 9.03) to indicate the location of the proper door for his direction of travel.



Figure 9.03

A railing is often located between automatic doors that are designed for one-way pedestrian traffic.

1. The traveler pauses when he either steps on a mat, presses the activation plate, or hears the automatic door open. By pausing, the traveler avoids getting too close to the door while it opens and avoids being hit by the door accidentally.
2. After hearing the door open fully, the traveler continues walking forward using the appropriate cane technique.
 - If the traveler encounters a door designed for traffic moving in the opposite direction, he should step out of the way of oncoming pedestrians and then search with his cane to each side to locate the desired door.

Common Errors and Corrections

Error:

The traveler searches for the door handle with his non-cane hand.

Correction:

The traveler should use his cane to locate the door handle. The cane can cover a larger area than the hand can cover. Using the cane also keeps the traveler's hand away from the hinge area (where it can be injured if the door opens unexpectedly).

Error:

The traveler keeps the cane tip anchored on the ground and moves the shaft of the cane in a fan-like motion in search of the door handle.

Correction:

Lifting the cane tip 1 inch above the ground and maintaining the cane in a vertical position while searching minimizes the possibility that the cane will miss the door handle.

Error:

The traveler fails to rotate a cane with a crook so that the shaft lays flat against the door before searching for the door handle.

Correction:

Laying the cane shaft flat against the door minimizes the possibility that the shaft will slide over the handle without detecting it.

Error:

The traveler stands less than an extended arm's distance from the door as he searches for the handle.

Correction:

Standing an extended arm's distance from the door as he searches for the handle minimizes the chances that the traveler's body will be hit by a pull door if it opens unexpectedly.

Error:

The traveler holds the cane in the DIAGONAL position when passing through a doorway in an unfamiliar area.

Correction:

The traveler should use the TOUCH technique when passing through a doorway in an unfamiliar area. This prevents him from bumping into objects or people on the other side of the doorway. The TOUCH technique is also the most reliable way to detect steps or other elevation changes at doorway thresholds.

Error:

The traveler fails to pause when he hears an automatic door open or when he steps on the mat.

Correction:

Pausing when hearing the door open or when stepping on the mat prevents the traveler from getting so close to the door that the door can hit him as it opens. It also gives the traveler time to listen for pedestrian traffic and to verify that the door is intended for use in his direction of travel—in some areas there may be two doors side-by-side, each designated for travel in only one direction.

Notes for Teachers

In public buildings, exterior doors generally open outward (due to fire codes). Similarly, public rooms that hold mid- to large-size groups will generally have doors that open out into the halls (for quick evacuation). Private homes and offices that house only a few people will usually have doors that open inward.

If the door opens inward, there is generally a recessed doorjamb; if it opens out, the door is generally flush with adjacent walls.

When traveling in a congested area, the traveler should be alert to environmental cues to determine whether the doorway is clear and/or that the door is being held open for him. In the latter case he can proceed using the CONGESTED AREA technique.

A tip for making the initial teaching process easier: Use doors that have windows that allow the instructor to see pedestrians approaching from the other side.

Automatic doors are most often found in large public buildings, such as grocery stores, hospitals, airports, and bus and train stations. In some areas the traveler can identify an automatic door by the feel of a mat under the cane tip or his feet. More and more, however, automatic doors do not have a mat, but are rather activated by pushing on a special plate that is mounted on a wall or on a post that is located a few feet in front and to the side of the door (see Figures 9.02a and 9.02b, above). Some doors are activated by a sensor that detects the presence of a pedestrian.

Related Techniques

Revolving Doors¹

¹ Knowing the NEGOTIATING DOORS technique may help the traveler learn to clear with his cane before exiting a revolving door.

NEGOTIATING STAIRS

Purpose

To ascend or descend stairs when using a cane

Prerequisite Techniques

Contacting & Exploring Objects¹

Diagonal

Negotiating Stairs—With a Guide (When the Traveler Is Carrying a Cane)²

Three-Point (see "Using the Handrail")

Touch

Touch & Drag (see "Using the Handrail")

Teaching Environments

Begin on a quiet, familiar or semi-familiar stairway that other pedestrians are not using at the time. The stairway should have the following attributes:

- It should be a single set of stairs with a landing that is large enough to allow the traveler to take a few steps before she needs to perform another skill (e.g., negotiate a door).
- The steps should be consistent in depth, height, and width and should not be curved.
- The stairs should have a solid riser between each step.
- The stairs should have good auditory feedback from cane contact and should not have a nosing that extends beyond the riser below. A cane tip can sometimes catch on such nosings and make it difficult for new travelers to develop a comfortable rhythm in ascending stairs with a cane.
- There should be 8–15 steps per set. This number is enough to achieve a comfortable rhythm, yet not so many that the traveler will tire quickly. When possible, the number of steps should be too many for the traveler to count easily. It is important that the traveler not count stairs but, rather, learn to focus on signals from her cane indicating her arrival at the landing.
- A handrail may be present or not, depending on the traveler's need. Initially, if a handrail is used, it should extend the entire length of the stairway, rather than start or end at the second or third step, in order to avoid confusing the traveler about the location of the first step and of the landing.

¹ The Contacting Objects portion of the CONTACTING & EXPLORING OBJECTS technique is used when the traveler's cane contacts the first step. It enables her to maintain safe and effective cane contact with the first step as she walks up to it.

² Prior experience negotiating stairs using the NEGOTIATING STAIRS—WITH A GUIDE (When the Traveler Is Carrying a Cane) technique may lessen the initial anxiety that some travelers feel when negotiating stairs without a guide.

Notes:

- Using a semi-familiar or unfamiliar stairway makes the traveler rely more on feedback from the cane and not her familiarity with the stairway to negotiate it.
- Enclosed stairwells with solid walls on each side are often used when introducing this technique. Unlike open railings, solid walls do not pose the risk that the cane tip will catch in a stanchion of the railing, should the cane tip drift too far to the traveler's side. Once the traveler has refined her ability to consistently hold the cane tip in the proper position, this skill can be practiced on a variety of stairways with open railings on the side.
- Some travelers find learning to negotiate ascending stairs to be less intimidating than learning to negotiate descending stairs. For this reason, it is generally recommended that instruction begins on ascending stairs and then proceeds to teaching descending stairs. In many cases, however, it will be necessary to teach negotiating both ascending and descending concurrently to be able to return to the bottom of the ascending stairway for additional practice and instruction. If a ramp or elevator is available to return to the lower level, it may be a useful alternative, especially if the instructor feels that the traveler would have difficulty learning the methods to both ascend and descend stairs concurrently.

Progress next to negotiating a variety of stairs, including those with the following features:

- Variety in length
- Several flights
- Covered, which prevents good auditory feedback from the cane (e.g., those with carpeting or rubber treads)
- Nosings overhanging the riser below
- Varying amounts of traction (e.g., with or without rubber runners, polished stone, carpeted)
- Variety in depth, height, and/or width
- Curved
- No handrails
- A solid riser between steps

Gradually lead up to negotiating stairways that have increasing pedestrian congestion.

Practice this technique in a variety of environments that require the use of this skill (e.g., public buildings, schools, theaters, shopping centers, bus and train stations, boarding and exiting city buses).

Skills

Ascending Stairs

To negotiate ascending stairs:

1. The traveler locates the riser of the first step by using the appropriate technique for the environment (e.g., TOUCH, TOUCH & DRAG, or TOUCH TRAILING).
2. She anchors the cane with the tip against the riser, as in the CONTACTING & EXPLORING OBJECTS technique.
 - When the traveler approaches the ascending stair riser, it is best to anchor the cane against the riser with the tip off the ground. If the tip is on the ground, the traveler who pushes down on the cane can sometimes anchor the cane on the ground without it actually contacting the riser—and get a false sense of the location of the first step. This can happen, for example, if the cane tip is inadvertently anchored in a sidewalk crack or in the carpet a few inches ahead of the step. By lifting the tip off the ground, the traveler will be certain that she has actually detected the riser.
3. The traveler places the cane in a vertical or semi-vertical position. She slides her hand down the cane shaft to a position slightly above waist height and walks up to the first step.
 - She should not contact the riser of the first step with her toes, because it is unnecessary to do so and because it can potentially injure the toes in a traveler who has impaired circulation (e.g., diabetes).
 - Positioning the cane vertically in midline upon contacting the stairs may facilitate a perpendicular approach to the base of the first step; positioning the cane semi-vertically while climbing the stairs provides additional body protection.
 - Lowering her grasp on the shaft will reduce any strain on the shoulder joint when holding the cane in this position to climb the stairs.
4. The traveler holds her cane vertically and slides the cane shaft left and right along the riser of the first step (a body-width distance only) to verify that she is aligned perpendicularly to the stairs.
 - If the traveler is unfamiliar with the stairs, she can
 - Slide the cane up the first riser and place it onto the first step to determine the height of the steps,
 - Slide the cane forward from the edge of the first step to the second riser to determine the depth of the steps,
 - Slide the cane shaft left and right (body width only) along the riser of the second step to determine if the stairway is curved or irregular.
5. The traveler positions the cane tip against the riser of the second or third step (depending on her height, arm length, and personal comfort), 1 inch below the edge (see Figure 10.01). The traveler holds the cane either vertically or semi-vertically to

ensure that the tip will cover no more than her body width and won't trip other people. Her arm is parallel to the ground and her elbow is straight, but not locked

- Many travelers prefer to hold the cane in the hand opposite the near wall of an enclosed stairwell as added insurance against having the cane tip trip other pedestrians. This is especially true for those who have difficulty keeping the cane tip positioned within their body width as they ascend or descend stairs.



Figure 10.01

The traveler positions the cane tip against the riser of the second or third step (depending upon her height, arm length, and personal preference).

6. The traveler climbs the stairs, keeping her trunk erect and her weight forward over the balls of her feet for balance. As she climbs, the traveler maintains her cane arm straight and parallel to the floor. In this position, the forward and upward movement of her body will automatically position the cane tip to lightly contact the riser of each step, 1–2 stairs ahead of her.
 - While ascending the stairs, the traveler should maintain the cane tip at the same distance (1–2 stairs) in front of her, as she determined in step 5.
 - It is important for the traveler to keep her arm steady in the position described above so that only the cane tip contacts each riser just 1–2 inches below the lip of each step. Allowing her arm to drop will make it necessary to actively "lift" the cane to clear each step, thereby reducing the fluidity and efficiency of her movement. Holding the cane too high (so that the cane tip does not contact the lip of each step) may cause her to prematurely think that she has detected the landing.
 - To keep the cane tip from bouncing against each riser, the traveler can put light forward pressure on the cane. Applying either too little or too much pressure, however, can also make the tip bounce while ascending the stairs. Light contact will prevent the cane from making excessive noise as the tip contacts each riser gently.

7. When the cane tip no longer contacts a riser, but swings forward instead, the traveler knows that the cane has reached the landing. The traveler then returns the cane to the TOUCH technique position by loosening her grasp on the cane momentarily and tossing it forward a few inches so the top of the grip is in line with her wrist (see the three photos in Figure 10.02). She clears the landing as she climbs the last 1–2 stairs (this number will match the number of stairs that the traveler holds the cane in front of her, from step 5).

- After completing a flight of stairs, it is important that the traveler clear before moving forward, or she could miss objects, drop-offs, or additional stairs.
- If possible, the traveler should clear by sweeping the cane from left-to-right or right-to-left so that she will reach the landing in-step for a smoother transition to the TOUCH technique.
- If the traveler has transferred the cane to her other hand to use the railing, she will need to return it to her usual cane hand upon reaching the landing.



Figure 10.02

Three photos show how, after climbing the stairs, the traveler returns the cane to the TOUCH technique position by momentarily loosening her grasp on the cane and tossing it a few inches forward so the top of the grip is back in line with her wrist.

Descending Stairs

To negotiate descending stairs

No Contact Method

1. The traveler approaches the stairs using the appropriate technique for the environment (e.g., TOUCH, TOUCH & SLIDE, or TOUCH & DRAG).
2. The traveler locates the edge of the first step by feeling when the cane tip drops over the edge of the first step.
 - If anticipating an imminent arrival at descending stairs, many travelers using the TOUCH technique find that using the Constant Contact method most easily locates the edge of the first step.
3. The traveler anchors the cane shaft in the midline position by pulling the tip back against the edge of the top step and an inch or so below the edge. She then walks up to it.
 - Anchoring her cane gives the traveler a reference point for the edge of the step as she walks up to it. It is important to have the cane tip not rest on the tread of the next step, because this can give some travelers a misleading sense of exactly where the edge is located.
 - If holding her cane in the Handshake Grasp, the traveler will need to rotate her arm inward (as though looking at a wristwatch) as she brings the cane to a vertical or semi-vertical position (see Figure 10.03). If she is holding her cane using the Pencil Grasp, she can simply walk up to the edge of the step.
 - If the traveler has difficulty not overstepping the edge of the first step after she anchors the cane, it is often recommended that she use the Handshake Grasp. The rotated arm position of the Handshake Grasp makes it more physically awkward for the traveler to overstep where the cane is anchored.



Figure 10.03

Three photos show how, using a Handshake Grasp, the traveler anchors her cane against the edge of the first stair (top), rotates her arm inward to bring the cane to a vertical or semi-vertical position (middle), and then walks up to the cane (bottom).

4. The traveler holds her cane vertically against the edge of the first step and slides it from side to side approximately one body width to verify that she is aligned perpendicularly to the stairs.
 - Some travelers place their toes slightly over the edge of the top step to confirm that they are aligned perpendicularly. This is generally not recommended, however, because it can decrease the traveler's base of support and can make her more prone to losing her balance if she is bumped from behind.
 - If the traveler is unfamiliar with the stairs, she can
 - Slide the cane down and place the tip on the first step to determine the height of the steps,
 - Slide the cane forward to the edge of the second step to determine the depth of the steps,
 - Slide the cane tip left and right (body width only) along the edge of the second step to determine if the stairway is curved or irregular.
5. The traveler holds the cane in the DIAGONAL position, with the cane covering no more than her body width.
 - She positions the cane tip suspended in the air 1–2 inches either above or ahead of the edge of the second or third step below (depending on the cane length, height of the traveler, and stair dimensions; see Figure 10.04).
 - Lowering the cane tip so that it contacts the tread of a lower step can cause that step to be mistaken for a landing.
 - Raising the cane tip more than 1–2 inches above the edges can cause the cane to miss the landing or to interfere with other people on the stairway.



Figure 10.04

The traveler maintains the cane tip 1–2 inches ahead of the edge of the first or second step below (depending on the height of the traveler and the cane length) as she walks down the stairs.

6. The traveler holds her head up and her trunk erect, and she places her weight on her heels for optimum balance.
 - Leaning her trunk backward (see Figure 10.05) can elevate her arm position and, thereby, alter the proper position of the cane.



Figure 10.05

Leaning the trunk backward beyond vertical can elevate the traveler's arm position, which raises the cane tip too high.

7. The traveler places her arm at her side with her elbow straight, yet relaxed. Bending the elbow excessively can draw the cane in and raise it too high to detect the landing (see Figure 10.06).
 - Many travelers prefer to hold the cane in the hand opposite the near wall or railing to keep the tip away from the center of the stairs, where it might inadvertently get in the way of other pedestrians. This is especially true for travelers who have difficulty keeping the cane tip positioned within their body width as they ascend or descend stairs.



Figure 10.06

Bending the elbow excessively can raise the cane too high.

8. When the cane tip contacts the landing, the traveler returns the cane to the TOUCH technique position and clears the landing as she walks down the last 1–2 steps (this number will match the number of stairs that the traveler holds the cane below her, from step 5).
 - After completing a flight of stairs, it is important that the traveler clear before moving forward in order to detect objects, drop-offs, or additional stairs.
 - If possible, the traveler should clear by sweeping the cane from left-to-right or right-to-left so that she will reach the landing in-step for a smoother transition to the TOUCH technique.
 - If the traveler has transferred the cane to her other hand to use the railing, she will need to return it to her usual cane hand upon reaching the landing.

Modifications

In some situations (e.g., on irregular stairs or when the traveler is anxious or fearful on stairs), the traveler may prefer to contact each step with her cane as she descends. If so, the traveler may choose to use one of the following modifications:

Tread method

This method is for stairs with smooth surfaces only. It can be difficult to do on stairs that are carpeted or have rubber treads that tend to keep the cane from sliding forward smoothly.

The traveler holds the cane in the diagonal position with the cane tip resting on the tread 1–2 steps below her. As she walks down the stairs, the traveler lets the forward movement of her body slide the cane tip forward to the edge of each successive step, where it then drops down to the tread of the next step. The traveler will know when she reaches the landing because the cane tip will slide forward a longer distance and will not drop down.

Edge method

The traveler holds the cane in the diagonal position with the cane tip resting on the edge of the stair 1–2 steps below her. As she swings her foot forward to take a step, the traveler raises the cane tip very slightly to clear the tread of the following step. As she starts to step down, she lets gravity drop the cane down to touch the edge of the following step lightly. This procedure is very different from tapping the cane on the tread of each step, which can lead to mistaking the tread of a lower step for the landing.

However, this method may not work smoothly for all travelers. Also, the specific length of a traveler's cane may be such that it is just short enough or just long enough to land on the tread instead of landing on the edge of the next stair.

Note: Because using either of these modifications produces less anxiety in many new travelers, it can often be helpful to teach these prior to teaching the No Contact method.

Using the Handrail

To locate the handrail before beginning to ascend or descend a set of stairs (for use by travelers who need to use the handrail for support or who wish to use it for any reason)

1. Upon locating the first step, the traveler anchors her cane and walks up to the first step. Starting with her free arm at her side, she reaches her hand forward from her thigh and to the side in a 45-degree vertical arc to locate the railing (see Figure 10.07).
 - Some travelers prefer to locate the handrail before anchoring their cane at the first step.
 - The traveler may need to transfer the cane to the hand farthest away from the railing to free her hand nearest the railing.



Figure 10.07

The traveler reaches her hand forward and to the side in a 45-degree vertical arc from her thigh (indicated here by a white arrow) to locate the railing.

2. If she fails to locate the handrail, the traveler turns and listens to be certain that other people are not crossing her path. She then trails the first step to the side of the stairway using the THREE-POINT technique (for ascending stairs) or the TOUCH & DRAG technique (for descending stairs). Turning to face the stairs, the traveler then reaches her hand forward and to the side to locate the handrail.
 - Upon locating the handrail, the traveler positions herself next to it, anchors her cane against the first riser, and prepares to ascend or descend the stairs.

Note: Not all railings run the exact length of the stairway. In some cases, railings stop short of or extend beyond the beginning or end of the stairway.

Common Errors and Corrections

ASCENDING STAIRS

Error:

The traveler fails to hold the cane below the grip when ascending stairs.

Correction:

Holding the cane below the grip when climbing stairs enables the traveler to hold the cane in the proper position without placing undue stress on her shoulder joint. The traveler may hold the cane using either the Handshake grasp, Thumb grasp, or Pencil grasp.

Error:

The traveler holds the cane so that the tip does not contact each riser when ascending stairs.

Correction:

Holding the cane so that the tip contacts each riser enables the traveler to identify the location of the landing (when the cane tip fails to contact a riser).

Error:

The traveler places her toes against the riser of the first step to verify her alignment with the first ascending step.

Correction:

The traveler should use her cane to verify alignment. This enables her to most efficiently verify her perpendicular position to the stairs. Also, not all stairs have risers and travelers with health concerns (e.g., diabetes) may injure their toes by bumping them into risers.

Error:

The traveler fails to consistently keep the cane 1–2 steps ahead of her as she ascends the stairs.

Correction:

Keeping the cane consistently 1–2 steps ahead of her provides the traveler with sufficient time to react when the cane locates the landing or contacts objects in her path.

Error:

The traveler intentionally taps the cane tip against the riser of each successive step while ascending stairs.

Correction:

The traveler should let the momentum of her body's forward movement move the cane forward against each step. It is not necessary to intentionally tap the cane against each riser, and doing so may make it contact the risers with excessive noise.

Error:

The traveler holds the cane in a semi-vertical position such that it covers her body width plus an inch on each side.

Correction:

The traveler should hold the cane in such a position that it covers no more than her body width. This ensures that the cane is not in the way of people passing on the stairs. The traveler can hold the cane either vertically or semi-vertically.

Error:

The traveler holds her cane with the tip pointing forward and upward. She holds her hand at waist-height and holds the tip 1–2 inches above the stairway as she ascends.

Correction:

The traveler should hold her cane in a vertical or semi-vertical position when ascending stairs. Pointing the cane upward and forward positions the cane where the tip will not detect the risers or landing and where the cane may poke other people on the stairway.

Error:

The traveler stops and clears the landing when her cane first contacts it, then continues traveling.

Correction:

The traveler should clear the landing while she ascends or descends the last 1–2 steps. This enables her to continue travel without stopping, thereby preventing her from inadvertently blocking the movement of other people on the stairway.

DESCENDING STAIRS

Error:

The traveler approaches the stairs using the DIAGONAL technique with the cane tip on the ground.

Correction:

The traveler should use the TOUCH technique when approaching stairs. This ensures that the cane tip will detect the first step. The DIAGONAL technique may not position

the cane tip to detect the first step, especially if the traveler approaches the stairs at an angle.

Error:

The traveler holds the cane below the grip when descending stairs.

Correction:

The traveler should not lower her grasp on the cane. Holding the cane at the top of the grip keeps the cane more fully extended for earlier detection of the landing and of objects that may be on the stairway.

Error:

The traveler allows the cane tip to rise more than 1–2 inches above the steps below when she is descending stairs using the No Contact method.

Correction:

Maintaining the cane tip 1–2 inches above the steps below (when using the No Contact method) ensures that the cane will detect the landing and will not poke people on the stairs.

Error:

The traveler allows the cane tip to drop below the position of 1–2 inches above the steps below when descending stairs using the No Contact method.

Correction:

Maintaining the tip 1–2 inches above the stairs below (when using the No Contact method) ensures that it will not contact a stair mid-flight that the traveler might interpret incorrectly to be the landing.

Error:

The traveler places the toes of one or both feet over the edge of the top step to verify her alignment.

Correction:

The traveler should use the cane to verify her perpendicular alignment to the stairs before walking down. Verifying her alignment prevents the traveler from descending the stairs at an angle and possibly tripping. It is generally not recommended that the traveler place her toes over the edge of the top step because this decreases her base of support at the top of the stairs and can lessen her stability if she is bumped from behind.

Error:

The traveler holds the cane pointing directly forward with her hand in midline as she descends the stairs.

Correction:

The traveler should hold the cane in the DIAGONAL position. This prevents the cane from poking her in the stomach when the cane contacts the landing or an unexpected object on the stairway.

Error:

The traveler fails to clear the landing before stepping on it.

Correction:

Clearing the landing before stepping on it enables the traveler to detect any objects on which she might trip.

Error:

The traveler allows her elbow to increasingly bend while descending stairs.

Correction:

Keeping her arm position constant keeps the cane tip 1–2 inches above the stairs below and ensures optimum detection of the landing. Allowing the elbow to bend can have the same effect as shortening the cane length and raising the tip and, thereby, delay the traveler's detection of the landing.

Error:

The traveler fails to use the TOUCH & DRAG technique along the edge of descending stairs when moving to the side of the stairway in order to find the railing.

Correction:

Using the TOUCH & DRAG technique ensures that the traveler will always know where the edge of the stairs is located and not overstep the edge or trip on something left on the ground along the top of the stairs as she moves to the side of the stairway in order to find the railing.

Error:

The traveler leans her trunk forward when descending stairs.

Correction:

The traveler should keep her trunk erect—not leaning forward—and her weight on her heels when descending stairs. Leaning forward places her center of gravity forward and may make her more prone to falling, especially if bumped from behind.

Notes for Teachers

It is generally recommended to teach ascending stairs before descending stairs because many travelers find the former to be less threatening.

Clues that assist the traveler to identify the presence of stairs:

- Sounds of people walking or talking on the stairs
- Temperature change
- Odor (e.g., possible musty smell in an enclosed stairwell)
- An echo quality characteristic of sounds in an enclosed stairwell
- Tactile information as the cane tip drops off the edge of the first descending stair or contacts the riser of the first ascending stair

In some environments (e.g., some schools, rehabilitation agencies), it is recommended to walk on the right side of the stairway, in keeping with the pedestrian traffic flow. This is not possible in all environments, however, so the traveler should learn to negotiate stairways on both the left and right sides and with the cane in either her left or right hand.

When using a handrail while ascending or descending stairs, the traveler must rely on her cane, not on the handrail, to identify the first step or the landing. Handrails often extend beyond, or stop short of, the end of the stairway.

Some travelers may need to use handrails for security or support (e.g., those with balance problems and/or excessive fear, the elderly); others may simply want to use the handrails as a matter of personal preference. While this should be the traveler's choice, railings are not always available. It is important, therefore, that travelers who are able to negotiate stairs without using a railing learn to do so.

Whenever spotting a traveler on stairs, it is recommended that the instructor hold on to the railing, if available, for his own support and bracing, in case it suddenly becomes necessary to support a traveler who has lost her balance.

- **Ascending Stairs**

While it is less common for a traveler to lose her balance when ascending stairs than when descending stairs (unless she has impaired balance or fails to maintain her center of gravity slightly forward), the instructor should always be prepared to act in case of emergency. Ascending the stairs just behind the traveler and holding the railing (see Figure 10.08) positions the instructor to assist the traveler most effectively should she lose her balance.



Figure 10.08

On ascending stairs, the instructor holds the railing and stands just below the traveler as he spots her.

- **Descending Stairs**

During initial instruction on descending stairs, the instructor is positioned below the traveler, out of the way of her cane. The instructor walks backwards down the stairs while holding the railing. This position enables the instructor to monitor the traveler's performance of the technique and to most quickly assist the traveler if she loses her balance. A three-point position (i.e., one foot forward, one back on a lower step, with the hand on the rail) provides the instructor with a stable position should he or she need to physically support the traveler at any time (see Figure 10.09).

- As the traveler's skill and confidence grow, some instructors prefer to not walk backward, but to simply walk forward alongside the student or walk one step ahead of the student and angle his or her body slightly toward the traveler (ideally in a narrow flight of stairs with railings on both sides so that the student and instructor can each hold a railing as needed).

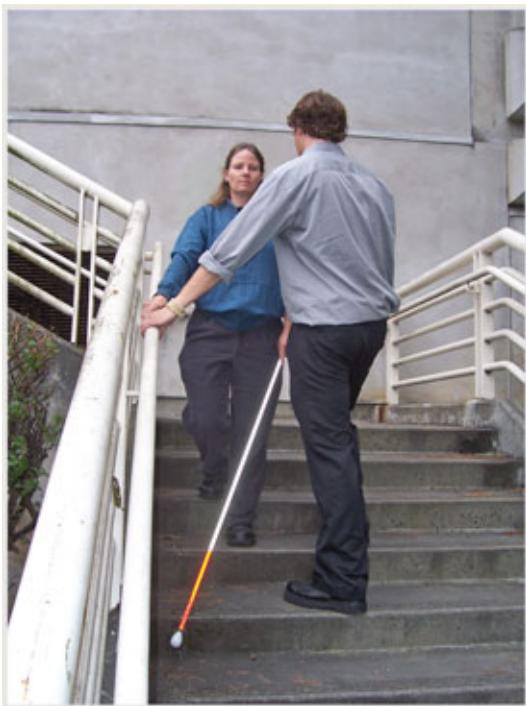


Figure 10.09

On descending stairs, the instructor walks backwards 2–3 steps below the traveler as he spots her.

Related Techniques

Basic Crossing¹

City Bus Travel

Escalators²

Intersection Approach¹

¹ Knowing the NEGOTIATING STAIRS technique may help the traveler learn how to anchor the cane and walk up to a down-curb that she has contacted at the approach corner of an intersection and also to manipulate the cane when walking up to an up-curb that she has contacted at the destination corner

² Knowing the NEGOTIATING STAIRS technique may assist the traveler in learning how to position the cane on the steps when riding up or down escalators and how to clear with the cane when exiting.

SPECIAL SITUATIONS

SIDEWALK RECOVERY

Purpose

This technique is used to locate and return to one's travel path (e.g., on a public sidewalk) after veering into a driveway, perpendicular walkway, or parking lot. It can also be used to find the perpendicular sidewalk at a corner.

While this technique is described in terms of "sidewalk recovery," it equally applies to recovery from a veer off any travel path.

Prerequisite Techniques

Contacting & Exploring Objects¹

Direction-Taking²

Touch & Drag

Teaching Environments

Begin in a quiet, familiar residential area in which there are perpendicular driveways and paths that intersect the sidewalk. The sidewalk should be smooth and straight, and it should have a distinct and regular shoreline (e.g., grass, bushes).

Progress next to a quiet, familiar residential area that has wider intersecting driveways or open spaces (e.g., gas stations or parking lots) adjacent to the sidewalk.

Lead up to areas that have less distinct or less regular shorelines (e.g., more turns and curves in the sidewalk).

Finally, progress to unfamiliar areas and those with increasing amounts of pedestrian congestion.

Note: In each type of environment, include practice in areas with parkways and in areas without parkways.

¹ The Contacting Objects portion of the CONTACTING & EXPLORING OBJECTS technique is used when the traveler's cane contacts a shoreline in front of her. It enables her to anchor the cane as she walks up to the shoreline, which she does in order to best position herself to next use her cane to locate the continuation of the public sidewalk.

² When recovering from an inadvertent veer off the travel path, the traveler can use the DIRECTION-TAKING technique to help establish either a perpendicular alignment with a shoreline that she contacts in front of her or to establish a parallel alignment to a shoreline that she contacts on her side. Doing so will often assist her in reorienting and then taking steps to relocate her original path.

Skills

Recovery From a Veer

A systematic method for relocating the travel path and returning to it after a veer

1. The traveler stops walking when she feels her cane tip contact a shoreline (e.g., grass, bushes, fence) in front of her.
2. Keeping her feet stationary so as not to lose her alignment, the traveler slides her cane along the edge of the shoreline to determine its precise location and her relative alignment to it.
 - Upon determining that she has actually veered off the sidewalk (and not just contacted the shoreline of the sidewalk), the traveler can “square-off” her toes to the shoreline to establish a perpendicular alignment to it. This sometimes assists with re-establishing orientation to her original line of travel.

Hint: The direction that the traveler needs to turn in order to square-off her toes to the grass is usually the direction she needs to go in order to relocate the sidewalk. For example, if she needs to turn slightly to the right to square-off her toes to the shoreline, then the sidewalk is generally located on her right side.

Note: “Squaring-off” does not necessarily mean contacting the shoreline with her toes; rather, it means to simply orient the direction of her feet perpendicular to the shoreline.

3. The traveler reaches her cane forward and sweeps it 45–90 degrees to each side (as necessary) to locate the original sidewalk (see Figure 11.01). It does not matter which side the traveler checks first, but if she is uncertain as to which way she has veered from a public sidewalk (i.e., towards or away from the parallel street), the traveler might want to check toward the parallel street side first since most veers are away from the street.
 - To increase the distance that the cane can reach to each side, the traveler can switch the cane from one hand to the other, holding the cane in the hand nearest the side toward which she is reaching.



Figure 11.01

White arrows show how, after the traveler reaches her cane forward, she sweeps it 45–90 degrees to each side (if necessary) to locate the original sidewalk.

4. If the traveler locates the original sidewalk, she simply moves to it and resumes travel. If she encounters an obstacle in her path, she can walk around it using either the TOUCH TRAILING or TOUCH & DRAG technique.

If the traveler does not locate the original sidewalk, she follows the shoreline toward the parallel street using the TOUCH & DRAG or TOUCH TRAILING technique until she locates the sidewalk.

- If the traveler does not wish to follow the shoreline to find the sidewalk, she may choose to move directly to the parallel street and then search for the original sidewalk. If she does so, the traveler should use the TOUCH & SLIDE or TOUCH (Constant Contact) technique to best detect the street edge at the bottom of the driveway where there may be no definite curb (see “If the traveler locates the street before locating the original sidewalk,” at the end of Step 4).
 - The parallel street provides a reference point when systematically searching for the sidewalk. The traveler should always know the location of the parallel street.
 - Moving to the parallel street is not recommended, however, in unfamiliar areas or in areas where it may be difficult to detect the street edge (e.g., driveway surfaces that blend into the street).
 - In some environments, clues, such as the cracks that border many sidewalks or the leveling of the walking surface, may assist the traveler to locate the original travel path without following a shoreline and without going all the way to the street.

If the traveler locates the street before locating the original sidewalk, she turns to face away from the parallel street and uses the TOUCH & DRAG or TOUCH

TRAILING technique along the edge of the parkway to locate the original travel path.

In rare instances, the traveler may contact a shoreline in front of her and detect a sidewalk that appears to be going equally forward on both sides of the shoreline (for example, if she contacts the corner of a yard where a driveway meets the sidewalk). If the traveler is unsure which one is the original travel path, she can take one step forward either closer to, or onto, the shoreline and sweep her cane to both sides. The original sidewalk will often become more obvious (see Figures 11.02a and 11.02b).

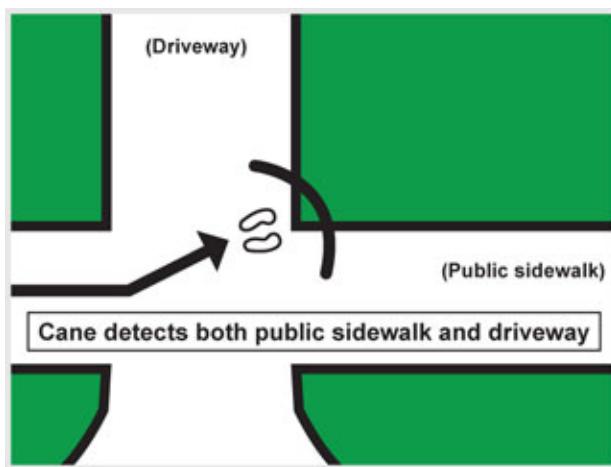


Figure 11.02a

Taking one step forward close to the shoreline can help the traveler determine which path is going in her original direction. The driveway and public sidewalk are perpendicular to each other, and a text box reads, "Cane detects both public sidewalk and driveway."

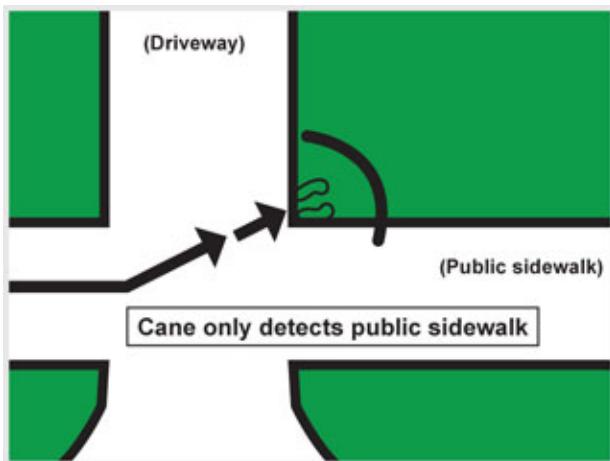


Figure 11.02b

Taking one step forward onto the shoreline can help the traveler determine which path is going in her original direction. The driveway and public sidewalk are perpendicular to each other, and a text box reads, "Cane only detects public sidewalk."

5. Upon locating the original sidewalk, the traveler turns and resumes travel.

To Locate the Intersecting Sidewalk at a Corner **Following the Parkway**

In areas where parkways are present, this is a systematic method for locating the intersecting sidewalk at a corner by first moving around any parkway that may be present between the intersecting sidewalk and the street.

Note: Some travelers find that staying in contact with a shoreline helps them to remain oriented.

1. As shown in Figure 11.03, upon reaching the curb at the corner (1), the traveler turns 90 degrees to face away from the parallel street and clears with her cane to locate the intersecting sidewalk.
 - If the traveler locates the sidewalk, she simply resumes travel in the desired direction.
 - If the traveler contacts a parkway (2), she makes another 90-degree turn to face away from the street that was perpendicular to her original line of travel. She follows the parkway using the TOUCH & DRAG or TOUCH TRAILING technique to locate the intersecting sidewalk (3). The traveler then resumes travel in the desired direction (4).

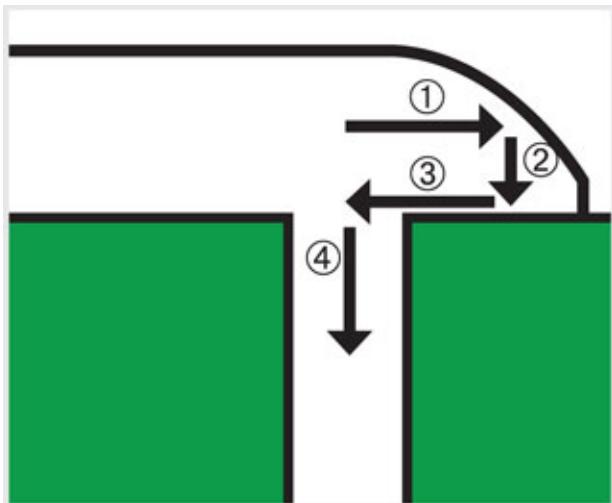


Figure 11.03

The arrows in this diagram show the sequence of steps in the skill outlined in Step 1, above.

180-Degree Turn

This is a simple and efficient method for locating the intersecting sidewalk at a corner. This skill works in areas with parkways. It also works well in small business and downtown environments without parkways, where sidewalks are wider and the traveler wishes to locate the middle section of the sidewalk (away from the curb). She might do this, for example, in order to avoid poles and other items along the curb edge of the intersecting sidewalk.

Some travelers prefer this skill because it can be generalized to most environments, including small business areas where there are poles along the curb edge and residential areas where there may, or may not, be parkways.

1. As shown in Figure 11.04, upon reaching the curb at the corner (1), the traveler turns around, placing the perpendicular street at her back.
2. The traveler takes 2–3 steps (2), then turns in the desired direction to continue her travel (3) and clears to verify that she has located the intersecting sidewalk before continuing travel.
 - If she locates the sidewalk, the traveler resumes travel in her desired direction.
 - If the traveler detects a parkway or other obstacle, she again turns away from the perpendicular street, takes 2–3 more steps, then turns and clears again. She repeats this procedure until she locates a clear path. The traveler then resumes travel in her desired direction.

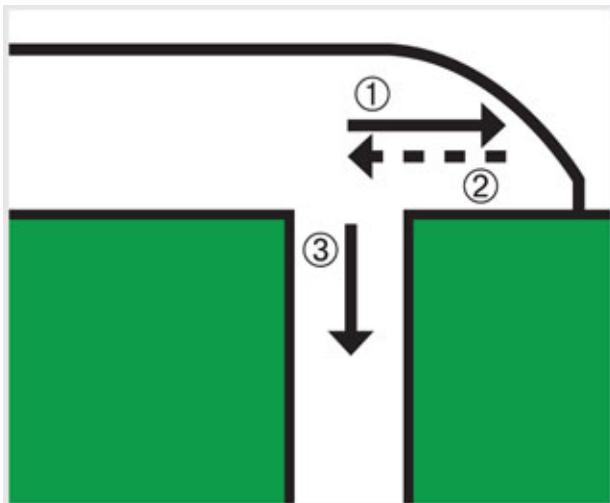


Figure 11.04

The arrows in this diagram show the sequence of steps in the skill outlined in Steps 1 and 2, above.

Following the Shoreline

In areas that are known to have blended curbs or curb ramps that may be difficult to detect, this approach may help the traveler locate the intersecting sidewalk and not inadvertently step into the street.

1. The traveler may choose to use the TOUCH & DRAG technique to follow the inside shoreline as she approaches the corner. Some travelers actually prefer this strategy as the most efficient method of locating the intersecting sidewalk at a corner when they plan to turn at the corner instead of crossing the street.

Regaining Line of Travel

This is an effective method to regain one's line of travel following unintended contact with the side of the travel path. It is often used to maintain on-course travel when walking along a path with a discernible border (e.g., curb or grass line) on its side.

Notes:

- Most travelers find it difficult to walk in a perfectly straight line without ever veering toward the border on either side of the travel path. This skill provides a simple means of making quick, in-course recoveries when the traveler contacts a shoreline on the side of the travel path.
- This skill can be used in both indoor and outdoor settings, whether or not the traveler is using a cane.

1. When the traveler identifies a veer toward the shoreline (e.g., by contacting a grass line on the side of the path), she turns her trunk (not her entire body) in the desired direction of travel and continues walking.
 - Turning only her trunk minimizes the possibility of overcorrecting for the veer.

- Some travelers may need to stop walking, rotate their trunk, and then continue travel; more experienced travelers will often make this adjustment while on the move.
- Sidestepping away from the shoreline will generally not correct the traveler's line of travel; rather, it will only cause her to contact the shoreline again a few steps later. In addition, sidestepping can look awkward, and if the traveler has not cleared to the side with her cane first it can be unsafe.

Common Errors and Corrections

Error:

Upon encountering a shoreline in front of her, the traveler fails to keep her feet in one position while using her cane to search for the sidewalk.

Correction:

Keeping her feet in one position helps the traveler maintain a general sense of direction while searching for the original sidewalk.

Error:

After failing to find the sidewalk after searching with her cane in one direction, the traveler turns and begins walking.

Correction:

The traveler should search with her cane to both sides, if necessary, before turning. This minimizes the chance that she will miss the desired path when it actually may be nearby.

Error:

After failing to find the sidewalk after searching with her cane in both directions, the traveler turns away from the parallel street and begins walking.

Correction:

After failing to locate the sidewalk with a sweep of her cane to each side, the traveler should first walk toward the parallel street to most efficiently locate a constant landmark for orientation (e.g., the street). Walking away from the street increases the likelihood of encountering further obstacles and hazards potentially found on private property and may make it more difficult for some travelers to maintain their orientation.

Notes for Teachers

Common clues that indicate to the traveler that she has veered can include:

- Contacting bushes, a grass line, or fence directly ahead in the travel path
- A change in the texture or type of terrain (e.g., cement, asphalt, dirt, gravel, grass) or its slope (e.g., the down-slope of a driveway);
 - In some environments, clues (such as cracks that border many sidewalks or the leveling of the walking surface) may assist the traveler to locate the

original sidewalk without following a shoreline and without going all the way to the street.

- A change in the relative direction of the sun;
- A change in traffic or pedestrian patterns (e.g., traffic and/ or pedestrian sounds becoming noticeably closer or farther away, street sounds heard from behind the traveler instead of from her side);
 - Traffic sounds are often the most useful clue to assist a traveler in reorienting after a veer because the parallel street serves as a reliable landmark in the environment from which the location of the sidewalk (and many other landmarks) can be determined.

When working with a traveler who seldom veers, working on narrow or congested sidewalks may provide more challenging environments that will give her additional opportunities to practice sidewalk recovery skills.

Related Techniques

Areas Without Sidewalks

Gas Stations

OBSTACLE IN THE TRAVEL PATH

Purpose

To move around obstacle/s that block the travel path

Prerequisite Techniques

Contacting & Exploring Objects¹

Three-Point²

Touch

Touch & Drag³

Touch Trailing³

Upper Hand & Forearm⁴

Teaching Environments

Begin in a quiet, familiar, indoor hallway with obstacles that partially obstruct the travel path. Introduce obstacles with flat sides before introducing round or irregular obstacles. Initially, moving around obstacles with flat sides will help the traveler maintain her line of travel.

Gradually introduce obstacles that are round or irregular in shape.

Progress to negotiating obstacles that fully obstruct the travel path. Sidewalks along quiet residential streets provide room for the traveler to move around obstacles that block the path by momentarily stepping off the sidewalk either on the side away from the street or on the side toward the street.

Lead up to performing this technique in unfamiliar outdoor areas with increasing amounts of pedestrian congestion and street traffic.

Practice this technique in a variety of environments, both indoor (e.g., school or office buildings, grocery stores) and outdoor (e.g., residential neighborhoods, small businesses, and downtown).

¹ The Contacting Objects portion of the CONTACTING & EXPLORING OBJECTS technique may be used when the traveler's cane contacts the obstacle. It enables her to position the cane properly if she chooses to walk up to the obstacle in preparation to search for a clear path on the side of the obstacle.

² The THREE-POINT technique is used when the obstacle completely blocks the sidewalk and the traveler must momentarily step down into the street to walk past it. The traveler uses the THREE-POINT technique to locate a clear space beyond the object at which she can return to the sidewalk.

³ If the traveler encounters an obstacle in her walking path, she can use either the TOUCH & DRAG or TOUCH TRAILING technique to follow around the obstacle and then resume her desired line of travel

⁴ The traveler may need to use the UPPER-HAND & FOREARM (Modified) technique when contacting or trailing vehicles, negotiating construction areas, and/or walking across grassy areas.

Skill

1. Upon contacting an obstacle, the traveler simply pauses or anchors her cane against the object and walks up to it using the CONTACTING & EXPLORING OBJECTS technique.
 - Some travelers who have good orientation and environmental awareness may choose to proceed directly to the next step rather than walk up to the object using the CONTACTING & EXPLORING OBJECTS technique.
2. The traveler uses her cane to clear on each side of the obstacle in an effort to locate the continuation of the travel path (see Figure 12.01).
 - If the traveler locates the path, she walks around the obstacle using the appropriate cane technique.
 - If the traveler does not locate the original travel path, she turns to one side and trails the object to its end using the TOUCH TRAILING or TOUCH & DRAG technique (see Figure 12.02).

Note: When walking on a public sidewalk in residential or business areas, the traveler is generally least likely to encounter additional obstacles if she travels around the obstacle on the parallel street side. She should only do so, however, if she deems it safe (e.g., no traffic driving in the curb lane).



Figure 12.01

In these two photos, white arrows show how the traveler uses her cane to clear on each side of the obstacle in an effort to locate the continuation of the travel path.



Figure 12.02

If the traveler does not locate the original travel path, she turns to one side and trails the object to its end using the TOUCH TRAILING or TOUCH & DRAG technique.

3. Upon reaching the end of the object, the traveler turns, and then either projects and follows a straight line of travel in her original direction, or continues to trail around the object to a point on the other side that is opposite where she initially contacted the object. She would then turn and resume her original line of travel.
 - If it is necessary to step into the street to move around the obstacle, the traveler uses the THREE-POINT technique to locate a clear place to return to the sidewalk and resume travel.

Common Errors and Corrections

Error:

The traveler fails to use the TOUCH & DRAG or TOUCH TRAILING technique as she walks around the obstacle.

Correction:

Using the TOUCH & DRAG or TOUCH TRAILING technique enables the traveler to most efficiently locate the clear path at the end of the obstacle while obtaining optimum forward protection with her cane.

Error:

The traveler fails to check both sides for a clear path before walking around the obstacle.

Correction:

Checking both sides for a clear path before walking around the obstacle minimizes any chance that the traveler will miss a nearby clear path.

Notes for Teachers

In unfamiliar areas or construction zones, it is often recommended that the traveler use the UPPER HAND & FOREARM technique (Modified) when moving around objects so as to avoid collisions with head-high obstacles, such as scaffolding.

Related Techniques

Areas Without Sidewalks

Gas Stations¹

Vehicle in the Travel Path

¹ The OBSTACLE IN THE TRAVEL PATH technique can be used to walk around any plantar boxes or other objects in the traveler's path as she returns to the sidewalk following an inadvertent veer into a gas station.

VEHICLE IN THE TRAVEL PATH

Purpose

Use this technique to move around a vehicle that is parked across the traveler's path. Such vehicles are often parked in driveways, and they either partially or fully block the sidewalk.

Prerequisite Techniques

Obstacle in the Travel Path

Touch Trailing

Upper Hand & Forearm (Modified)

Teaching Environments

Begin in a quiet, residential area where there is minimal, if any, traffic on the parallel street. Introduce the traveler to a variety of situations in which the vehicle is parked partially across the sidewalk, is parked fully across the sidewalk, and when one end of it protrudes into a traffic lane. Such situations provide opportunities to practice making judgments as to whether to walk around the vehicle on the street side or on the side away from the street.

Provide opportunities for the traveler to move around a variety of vehicles, including cars of varying sizes, trucks, minivans, SUVs, etc.

Progress next to areas that have increased traffic on the parallel street.

Practice this technique whenever the opportunity naturally occurs in travel.

Skill

1. When the traveler's cane contacts a vehicle across her travel path, she simply pauses or stops a distance of about one step from the vehicle. Using auditory information (e.g., the sound made by her cane as it contacts the vehicle) and/or tactile information transmitted through the cane, the traveler identifies whether the vehicle is a car, van, or truck.
2. Using the OBSTACLE IN THE TRAVEL PATH technique, the traveler reaches to each side with her cane to see if she can locate the continuation of the sidewalk. If so, she may choose to simply walk around the vehicle on that side.

If the traveler does not locate the continuation of the sidewalk, she then turns toward the parallel street and does one of the following:

- If the vehicle partially blocks the sidewalk, the traveler trails toward the parallel street and around the end of the vehicle, then projects and follows a straight line of travel forward.
- If the vehicle completely blocks the sidewalk, the traveler trails toward the parallel street and around the end of the vehicle to a point on the vehicle's other side (e.g., door, tire) that is directly opposite where she initially contacted the vehicle. She then projects and follows a straight line of travel forward.

Note: The traveler should not depend on squaring off from the vehicle to reestablish her line of travel, because the vehicle may not be parked at a right angle to the sidewalk.

- When trailing around a van or truck, the traveler should use the UPPER HAND & FOREARM technique (Modified) to protect her face from contact with such things as protruding side mirrors and bike racks (see Figure 13.01). Using her cane in the hand nearest the vehicle and performing the UPPER HAND & FOREARM (Modified) technique with the opposite arm will provide the best protection by placing that palm in position to contact any protruding mirrors, etc.



Figure 13.01

The traveler uses the UPPER HAND & FOREARM (Modified) technique to protect her face from contact with protruding side mirrors when trailing around a van or truck.

Notes:

- Unless it is unsafe to do so, most travelers find that trailing around the vehicle on the side closest to the parallel street limits the potential of encountering additional obstacles sometimes located on private property. If it is unsafe or if the traveler lacks the judgement or skills to safely travel in the street while trailing around the vehicle, however, it is better to go around the vehicle on the side away from the parallel street.

- As a note, while some travelers choose to walk up to the vehicle in order to later trail around it more easily, others choose to remain further from the vehicle and to simply trail it using an extended arc on that side. This latter approach requires an extended arc width on the vehicle side that some travelers may find awkward to do, yet it can minimize any unexpected contact with objects protruding from the vehicle and may even eliminate the need to use the UPPER HAND & FOREARM (Modified) technique.
- Some skilled travelers may even choose to walk around a vehicle using the TOUCH technique instead of TOUCH TRAILING, relying on distance estimation and/or reflected sound to monitor their proximity to the vehicle. Due to the potential for inadvertently veering too far from the vehicle, however, this approach is not recommended if the traveler must walk into a street where traffic might be present.

Common Errors and Corrections

Error:

The traveler walks around the vehicle on the parallel street side even though the vehicle protrudes significantly into the street.

Correction:

Walking around the vehicle on the building side when the vehicle protrudes significantly into the parallel street prevents the traveler from getting too close to moving traffic on the street.

Error:

The traveler makes physical contact with a vehicle in a driveway when its engine is running.

Correction:

The traveler should never contact a vehicle in a driveway when its engine is running; rather, she should wait until either the vehicle moves out of the way or the driver turns off the motor. This ensures that the vehicle will not start moving while she is walking around it.

Error:

The traveler fails to hold her arm in the UPPER HAND & FOREARM (Modified) position when trailing closely around a van or truck.

Correction:

Holding her arm in the UPPER HAND & FOREARM (Modified) position protects the traveler from bumping her face into the side mirrors when moving around a van or truck.

Error:

The traveler fails to maintain contact with the vehicle when walking in the street as she moves around it.

Correction:

Maintaining contact with the vehicle by using the TOUCH TRAILING technique while walking in the street prevents the traveler from moving too far into the street and possibly into the path of moving vehicles.

Error:

After walking around a vehicle, the traveler squares off to it to regain her line of direction.

Correction:

The traveler should not square off from the vehicle in case it is parked at an angle. Doing so might align her to veer off the travel path.

Notes for Teachers

Unless it is unsafe to do so, most travelers find that trailing around the vehicle on the side closest to the parallel street limits the potential of encountering additional obstacles sometimes located on private property. If, however, the vehicle is parked so that it extends far enough into the street to put the traveler dangerously close to traffic, it would be better to travel around the vehicle on the side away from the parallel street.

- If a traveler lacks the judgment or ability to reliably determine whether or not it is safe to walk around a vehicle on the parallel street side (without getting in the path of moving traffic), then it would be advisable for that traveler to always trail around the vehicle toward the building side, despite any increased potential to encounter obstacles.

If the traveler encounters a vehicle with its engine running, she should step back and wait for the vehicle to turn off its engine or move out of the way before she continues. Travelers should use extreme caution before walking around a vehicle encountered in the travel path.

- However, note that because electric and hybrid vehicles emit no sound when idling, some people feel that it is not always possible to know if the motor is running or to ensure that the vehicle won't suddenly back out of a driveway and into the street while the traveler is crossing behind it. (This assumes that the vehicle has pulled forward across the sidewalk and would be backing out into the street.) Some O&M specialists, therefore, recommend that a traveler walk around the front of a vehicle whenever possible, or at least ensure that the driver of any vehicle is aware of the traveler's presence before crossing behind the vehicle. To determine whether the front end of the vehicle is facing toward or away from the parallel street, the traveler can trail the side of the vehicle to locate the side mirror or other features.

Related Techniques

Areas Without Sidewalks
Vehicle in the Crosswalk

REFERENCES

Baek, J.H., Kim, J.W., Kim, S.Y., et al. Acute effect of repeated passive motion exercise on shoulder position sense in patients with hemiplegia: a pilot study. *NeuroRehabilitation*, 25(2), 101–106. <https://doi.org/10.3233/NRE-2009-0504>

Fazzi, D. & Barlow, J. (2017). *Orientation and mobility techniques: A guide for the practitioner* (2nd Ed.). American Foundation for the Blind.

Jacobson, W. (2013). *The art and science of teaching orientation and mobility to persons with visual impairments* (2nd Ed.). American Foundation for the Blind

Ju, Y.Y., Wang, C.W., & Cheng H.Y. (2010) Effects of active fatiguing movement versus passive repetitive movement on knee proprioception. *Clinic Biomechanics*, 25(7), 708–712. <https://doi.org/10.1016/j.clinbiomech.2010.04.017>

Lattanzio, P.J., & Petrella, R.J. (1998) Knee proprioception: a review of mechanisms, measurements, and implications of muscular fatigue. *Orthopedics*, 21(4), 463–470. <https://doi.org/10.3928/0147-7447-19980401-19>

Ostry, D.J., Darainy, M., Mattar, A.A., Wong, J., & Gribble, P.L. (2010) Somatosensory plasticity and motor learning. *Journal of Neuroscience*, 30(15), 5384-5393. <https://doi.org/10.1523/JNEUROSCI.4571-09.2010>

American Printing House for the Blind, Inc.
1839 Frankfort Avenue
P.O. Box 6085
Louisville, Kentucky 40206-0085
Phone: 502-895-2405
Toll Free: 800-223-1839
Fax: 502-899-2274
Email: info@aph.org
Website: www.aph.org

**Step-By-Step, 2nd Ed.
STUDY GUIDE
Long Cane Techniques**

Copyright © 2021

Catalog Number 8-75982-00